AMERICAN
DYESTUFF REPORTER

VOLUME XXIII APRIL 9, 1934 NUMBER 8

Temperature Control

Possibilities and Economies in the Textile Industry

By G. L. ATKINSON

IT IS to be regretted that the textile industry in general has not progressed with regard to methods and ideas as have other industries. Perhaps some of this is due to the fact that textile men in particular are notoriously difficult to convince, and only consent to entertain an idea or new machine long after other people have used them. While we all view new ideas and machines with certain apprehension, it can be definitely stated that there are means by which costs can be reduced, processes improved and finishes definitely made better.

Perhaps the section of the trade that is the last to embrace new ideas is the preparing, dyeing and finishing section, although it must be stated that the nature, number and difficulty of many of the processes in this section, has materially hindered progress. There are still, however, many firms in the trade, who carry out many of these processes in a distinctly haphazard manner. Many of the processes are shrouded in mystery, they are so well shrouded in certain instances, that even the management are not aware of the effects, or the costs, they only know for certain the results achieved on the cloths.

Temperature control applied to this section of the industry is capable of bringing great benefit. This benefit is not only made with regard to reduction of costs only, but also in certain processes being improved and the standard of work turned out, irrespective of the type of cloths being better.

That a great amount of steam is used in all processes from preparing to the final finishing is, of course, unavoidable, yet it is possible for steam costs to be reduced by a considerable fraction and the load upon the power plant to be eased, resulting in considerable saving in repairs.

Steam is used in the preparing processes, in the crabbing and scouring operations, in dyeing it is used for both the boiling up of the bath and also the dyeing liquor. In the drying of the cloths, no matter what the type of machine, steam is used. It is also used extensively in the final finishing processes.

In many cases use is made of steam long after it is really necessary, yet this has a two-fold effect: 1. A large amount of steam is wasted by this means. 2. Often the cloths are impaired or actually spoiled, this view being taken with regard to the finish and handle of the cloths.

A typical operation and one in which great quantities of steam are used, is the crabbing operation. It can be stated quite confidently that fully half of the steam used during this important operation can be saved with ultimate benefit to the firm concerned, in the matter of reduced costs, and also to the power house in that less steam is needed. The load on the power plant is reduced and what is more important, particularly in a textile mill, the fluctuation in the load is not as great. This is often a serious problem to a finishing concern, where the power plant has to supply adequate steam for preparing, dyeing and finishing machinery.

Crabbing machines generally consist of one, two or three bowls or troughs, in which is a roller and around which the cloths are run at open width under tension. In actual practice a wrapper sewn to the piece end is first run round the crabbing roller. The trough is then filled with liquor and the liquor is thoroughly boiled up, before the goods are allowed to run into the trough and around the crabbing roller. It is essential if the cloth is to be correctly "set" and that the crabbing shall be quite even; that the

liquor shall be thoroughly boiling when the goods are run into the crabbing trough.

If the liquor in the crab bowl is not thoroughly boiling, it is quite likely that the goods will be unevenly crabbed or "set." This is also a particularly difficult fault to cure properly, and is always due to uneven flow of the crabbing liquor.

In an effort to avoid this, the writer has noted that in many concerns the operatives in charge of the machine, persist in keeping the steam valve open much longer than is really necessary. This being done, of course, in an effort to eradicate uneven flow of the crabbing liquor and the chances of the pieces being unevenly crabbed. On the other hand it results in great waste of steam and is by no means an absolute safeguard against the possibility of uneven crabbing occurring. The writer has noted many instances of where the liquor in the crab bowl was boiled for as long as six minutes before the pieces were run into the crabbing trough. Two minutes would have been ample for this, and would have saved a great deal in steam costs.

Temperature control in this operation bestows great benefits not only with regard to the reduction of steam costs, but also with regard to better results being achieved upon the cloths. By use of a suitable controller, there are several reputable makes upon the market, and this is really a thermometer, it is easy for the operatives in charge of the machine to tell the instant the liquor in the crab bowl reaches boiling point and to turn off the steam promptly without loss of time.

That is the obvious side of the question of temperature control. By this means it is possible to cut down both steam losses and safeguard against faults in the fabric. Yet there is the question of improving the crabbing results and standardizing those results when obtained.

It will often be found that pieces are crabbed in batches varying from two to eight or ten pieces, this differing according to the type of cloth, finish desired and the machine that they are crabbed upon. However, the cloths are always wrapped around the crabbing roller under tension. Although the pieces are entered into the trough, with the liquor at the boil, this does not ensure that the liquor is boiling when the fourth or fifth piece has run in. The pieces themselves have a great cooling effect upon the bath. The writer has undertaken tests, during this operation, and found that the temperature of the liquor when the last piece of an eight roll batch had been wrapped around the crabbing roller, was nearer eighty degrees than a hundred.

This firm was incidentally at the time, troubled with a fault known as ended pieces. This fault was directly due to the fact that the temperature of the crabbing liquor was much below boiling point when the last piece entered, with the result that the flow of the liquor was uneven and that uneven crabbing took place. This fault was not discovered until a temperature controller was fitted to the machine.

It often happens that certain pieces are much thinner and altogether much more papery in handle, although they have been given the same crabbing routine. This occurs owing to the fact that the liquor in the crab bowl is not boiled for the same length of time or that the temperature in the bowl of the crab at the two operations was not the same. The effect of the controller is to standardize such results, and this is one of the greatest troubles in the finishing of dress and coating fabrics, achieving a certain type of finish and handle and retaining it, throughout a huge number of pieces.

The difficulty of obtaining exactly the same result in crabbing with regard to finish and handle on the same quality of pieces, will be realized when often the goods are crabbed in boiling liquor in three bowls of the machine. Ending of piece goods in the crabbing machine may often result in three or four yards of the cloth being spoiled and the cost in the course of a year's time is certainly considerable.

In the steaming of goods during the crabbing operation, practically the same faults occur. This steaming on the crab is carried out on those cloths, where crabbing in the bowls in boiling liquor only is not sufficient to ensure that cracking, crimping, running marks, etc., will not occur during an ensuing process, such as dyeing for example. The goods are wound at open width under tension, upon a steaming can. It is, of course, no secret that during the steaming operation and for some considerable time afterwards, the wool fibers of the fabric are in the plastic state.

Due to the fact that they are in the plastic state, they are very susceptible to any change in temperature and also in pressure. These two factors are always responsible for faults or unsatisfactory results in the cloths.

In the operation it is desirable that both the temperature and the pressure should be strictly controlled, or some means should be provided whereby these may be checked. It will be found that if the temperature of the steam used in this operation is high, that the results will be unsatisfactory. The pieces in all probability will be thin and papery in handle. This is due to the fact that steam at a high temperature or higher than that of the crab bowls, contains very little moisture or water content. This tends to make the fibers of the wool very brittle and in addition they are thinned to a remarkable extent. It should be remembered that this operation is very searching as far as its results upon the cloth are concerned. In addition the cloth is afforded no protection against the steam, as in the decatizing operation, where the cloth is protected to a great extent by the wrapper of the machine.

In addition no moisture is present in the cloth, nor is there any liquor surrounding the cloth as in the bowls of the crab. Hence steaming with high temperature steam, which has little or no water content, results in the fibers of the cloth becoming brittle and the resultant handle is very thin and papery. If this is allowed to occur, the entire benefits of the steaming operation are lost.

Continued steaming which is often done by the operatives in charge of the machine, in order to ensure that

the setting of the goods has been correctly accomplished has just the same effect, it produces a thin and papery handle. The action of moisture laden or steam with a certain amount of water content, is to soften the wool fibers of the cloth. In addition to this fact, when steaming is correctly carried out the fibers of the cloth swell to a considerable extent.

This effect of steaming is one of its most valuable properties, and this is often utilized in the case of crossbred or low class quality goods, for the softening of the handle. It will be found if a test is taken, that a crossbred piece which has been steamed is always softer in handle than a piece of the same quality which has not been steamed. In addition the handle of the steamed piece is much fuller, than the unsteamed one, this being due to the swelling of the wool fibers, while the unsteamed piece is both harsh in comparison and also very thin in handle. There is, of course, a definite point at which the fibers of the cloth refuse to take or absorb any more steam and if steaming is persisted in beyond this point, then the whole benefits of the operation are lost, for the fibers are thinned again, and no regain ensues.

The pressure during this operation is also, of course, of the greatest importance. If the pressure of steam used is too great this also results in the handle being thin and papery. The writer has noted many instances of steaming being carried out with a pressure as great as 35 or 40 pounds, when 9 to 14 pounds would have been ample. Both the pressure and the temperature can be controlled by means of suitable instruments and are of great benefit during this vital operation. Not only are steam costs reduced by this means, but also the finish and handle of the cloths are improved and the results are standardized.

The scouring process is an important preparing operation and here temperature control bestows great benefits, for it is essential in this operation that the temperature should be stable during the operation. It will be found that with many cloths such as serges, poplins, repps, etc., if the temperature of the scouring machine is allowed to become too high then faults develop in these cloths, such as running marks, crow footing, crimping, etc. These can be reduced to a minimum by the use of the most suitable instruments. It is possible to fit a controller to the machine or plant, in order that any pre-determined temperature is not exceeded. This results not only in steam being saved, but also in far fewer faults occurring in the cloth, as the controller can be set to any degree and cannot be exceeded by the operatives in charge of the machine during the scour.

The same thing occurs in the drying of textile fabrics, here again there is a definite point at which the drying of the cloths can be correctly carried out. The waste in steam for heating is often considerable and as the average tentering machine costs anything from 40 to 60 cents per hour to run, it is vital to see that the correct drying temperature is not exceeded.

Benzol Exports and Production Higher

Exports of benzol from the United States in 1933 totaled 8,439,456 gallons, valued at $1,594,075, compared with 3,241,317 gallons, valued at $611,656, in 1932, according to C. C. Concannon, Chief, Chemical Division, Bureau of Foreign and Domestic Commerce.

Benzol, an important industrial chemical product obtained in the distillation of coal tar, is used extensively as a motor fuel constituent. Other consuming outlets are explosives, dyes, plastics, and a number of other finished coal-tar products.

Some shifts have occurred in the markets for American benzol, Mr. Concannon stated. Shipments to the Central and South American area increased 20 per cent compared with 1932, Argentina taking 71,000 gallons of a total of 130,000 gallons shipped to that area.

Consignments to the Far East practically quadrupled in 1933 compared with the preceding year, the largest Far Eastern purchaser being Japan which purchased 1,309,000 gallons compared with 374,477 gallons in 1932.

European purchases more than doubled, leading countries of destination being France with 4,692,340 gallons, United Kingdom, 915,452 gallons, and Germany 867,933 gallons. The importance of the European market for American benzol, Mr. Concannon pointed out, is apparent from the fact that in 1933 approximately 13 per cent of the total American output was sold abroad and of the total American exports 80 per cent was destined to European countries.

United States production of benzol in 1933, estimated from the production of coke at by-product ovens known to recover benzol, amounted to 61,858,000 gallons compared with a production of 45,668,000 gallons recorded for 1932, 80 per cent of which entered the motor-fuel field.

Sandoz Shade Cards

The Sandoz Chemical Works are sending out three new shade cards, as follows:

Pyrazol Fast Dyes on Cotton and Rayon Pieces—so named since they represent a selected group of direct dyestuffs said to possess the highest degree of light fastness as well as other all around good qualities. Methods of application for cotton and rayon are given. Samples of dyeing are shown.

Visco Brown R—a new reddish brown said to have excellent level dyeing qualities of particular interest for rayon. This brown is highly recommended by the manufacturer for rayon crepe (dress goods) because of its fastness to perspiration, hot pressing and rubbing. It is further claimed to be white dischargeable and with good fastness to washing. Samples of dyeing and discharge work are shown.

Artisil Direct Colors Dyed on Acetate Rayon—methods for dyeing are given as well as for scouring with Rayon Scour A. A fastness table is given together with many dyed samples.

Washington News Letter

By **WALDON FAWCETT**

When Design Patenting Hinges Upon Color

THE highest reviewing judicial authority at Washington has just supplied a fresh answer to the perennial question of the efficacy of color as an element to command legal protection for original designs in textile products. In this particular instance, the styling of hosiery is predicated to some extent upon the introduction of color. A design patent was applied for on the ground that the specific employment of contrasting color involved the exercise of a high degree of inventive effort and thought.

That this effort to obtain recognition for color as an instrumentality of invention has developed into a precedent-setting test case is due to the persistence of the designer, Henry W. Hoffmann of Weissport, Penna. His claims rejected, first, by the Primary Examiner, and later by the Board of Appeals at the Patent Office, the inventor finally had recourse to the U. S. Court of Customs and Patent Appeals, which last tribunal, not content to judge by drawings, made examination of the actual stockings by way of appraising the contribution of color to distinctiveness in appearance.

The Hoffmann design has, at or near the upper portion of the stocking, a relatively narrow band of a plurality of courses extending around the stocking and of a color contrasting with the body of the article, immediately succeeded by a surrounding band of the same color as the body of the stocking and containing at relatively close intervals open or transferred loops, or picot-like loop formations, the same being immediately succeeded by another band of a plurality of courses extending around the stocking of a color contrasting to the body. Stressed in all the representations to the successive tribunals was the determination of the inventor to attain, via the use of color, a variation from the usual, conventional designs of full fashioned silk hosiery.

Patent Office examiners rejected the Hoffmann application by reason of patents already issued in 1911 to an inventor, by name Blood, and in the year 1927 to an inventor by the name of Dakin. The Dakin invention consists essentially of ornamental features attained by means of a series of openings. But the Blood patent covers, specifically, a circumferential stripe at the welt of the stocking. Where the issue was eventually to turn was on the question of the part played by color in creating a distinctive ornamental design. In the documents on file, the Blood design obtains its effect by means of the stitches which form the stripe some distance below the top of the stocking. There is no assertion that the novel effect is secured by executing this stripe in contrasting color.

For all the inequalities in color the examiners rejected the Hoffmann design on the ground that it is not patentably distinguished from the earlier effort in the matter of design and structure. The Board of Appeals at the Patent Office concurred in this view. When the inventor sought vindication higher up the Solicitor for the Patent Office in his argument brushed aside the claims on the structure of the colored band, declaring that the configuration would be so minute in a finished stocking that an ordinary observer would note only the stripe and not the detailed configurations.

This resulted in the gauge of the legal battle being confined substantially to the color equation and the spokesmen for the Patent Office rested their case on that pivot. The Appeals bench was informed that a colored border stripe is a common ornamentation for a stocking,—that, in fact, there was a time not very remote when stockings were all stripes. Therefore the Patent Office took it as axiomatic that it requires more than a stripe around the top of a stocking to support a patent for a design of that stocking.

Reiterating statement of a position which has been taken with increasing insistence, the Patent Office officials urged, incident to the appeal of this case that design patents should stand on as high a plane as mechanical patents and that a patent should not be granted for every trifling device,—every shadow of a shade of an idea which is within the knowledge of the man skilled in the art. In effect, challenge was made to any styling strategy which undertakes to establish the presence of "invention" by investure of color in stitchings, etc., which the censors have insisted "are barely visible with the naked eye."

In the final effort to prove that the Hoffmann design is sufficiently different to warrant patent recognition the attorneys placed the earlier patented designs in parallel, emphasizing that there is no contrasting or color effect in the Blood design and that the Dakin design has no contrasting color bands above and below special stitches but merely "color spots" that present an appearance in no way resembling the color band latterly introduced. The logic was also summoned that use of a contrasting color band, serving as a background, operates to enhance the appearance of distinctive weaves, such as the peculiar puckered or shell effects claimed for the Hoffmann pattern.

All that could be said in behalf of color, translated by an allegedly distinctive structural vehicle, failed to move the Court of Appeals when it came to say the last word. Admitting that the Hoffmann design differs in some respects from its earlier near-relatives, the Court remarked that the differences were not substantial, or at least would not appear so to the average person. The judgment was that the color version of the shared basic design "does not produce a substantially different aesthetic effect." Moreover, the theory was established that it is within the skill of an artisan or designer to modify the prior design to obtain the later version. The Appeals bench also warned that the mechanical structure of an article must not be confused with its design. That there has been invention in the mechanical process of producing the Hoffmann design did not save the day for the design itself when the asset of contrasting color failed to establish the ornamentation as sufficiently unique to support a design patent. The test for design is traditionally "The appearance of the design as an entirety when judged by the perceptions of the average person." But the message currently given by the chief umpire is that color single-handed does not create "invention."

Color Increases Its Aid to Textile Bags

Regardless of economies in other branches of U. S. Department of Agriculture, the Division of Cotton Marketing continues its drive to promote the use of cotton bags as consumer packages for farm products. In this particular extension campaign to open new markets for cotton textiles, color likewise continues to serve as a stimulating element. Indeed, having graduated from the experimental stage, the asset of color capitalization is emerging as a main factor in the adoption of fabric bags to new tasks and in the increase in the volume of bag consumption, notably in the field of foodstuffs.

A "progress report" on this significant color invasion is in order because specifications for bag fabrics have now been evolved which afford a working basis for complementary research and testing operations by the dye industry. Something over three years ago, the AMERICAN DYESTUFF REPORTER carried the first account of the introduction of color as an aid to the marketability of cotton bags,—especially the then freshly-introduced open-mesh bags. Since that introduction, progress has marched steadily and rapidly. Just recently a new phase has been entered which undertakes the recognition in color-selection not only of "eye appeal," or attention-arresting quality, but likewise the practical considerations of "re-use" or after-use of the bag fabric.

An illustration of the force of this new influence is afforded in the salt trade which has lately increased the range of sizes of cotton bags, used as wholesale as well as retail containers. Following a marketing investigation, a leading interest in the salt trade has recently requisitioned bags dyed to approximate the popular "pepper and salt" mixture because it was found that this pattern was a favorite with the rapidly increasing number of buyers of bagged salt who are salvaging the containers for conversion into articles of apparel, etc. Similarly, the laundry interests that give preference to soap flakes or chips packed in cotton bags because of the privilege of conversion into laundry bags, are considering the wisdom of turning to double-purpose bags in colors that will match the rainbow tints of present-day towels, bed linen, table linens, etc.

When the news of the color invasion was first given in this journal the citrus fruit industry had just started to retrieve a false move. When the open-mesh bags were first introduced, as carriers for oranges, dun-colored fabrics were used. The public reaction was not favorable. And it was no better when grey goods were substituted, because the color soiled too readily in handling. The reasoning of most of the color specialists favored commitment forthwith to colors in harmony with the natural color of the ripened oranges. This concentration did not come about, though, until tryouts had been made, first, with green bags, and eventually with bags of blue hue.

For all that the trend to sympathetic color for orange bags set in several years ago it has required all the intervening time to shake down commercial practice to the present preference for the color known as Tangerine. This color, an intensified orange shade, has not yet found universal adoption but its advent is mainly responsible for the jump in production of consumer-size cotton bags for the citrus trade from 1,250,000 in the season of 1931-32 to more than 10,000,000 in the season of 1932-33, with a further heavy increase forecast for the present season.

An explanation of the latest spurt in colored bags for citrus fruit is found in the addition, to the line of standard sizes, of a "half box" size. The sizes heretofore in use comprise the 5-pound, 8-pound and 10-pound, predominantly the latter. The entry into large-scale consumption of the 40-pound bag opens a new vista for the colored bag. Strongly incentive to a larger use of the tangerine-hued bags is the discovery that this vivid setting goes far to take the curse off oranges afflicted with rust spots which do not affect the palatability of the fruit but do impair marketability.

Color interests may look forward to a further major stimulus to the use of colored bags for citrus fruit as soon as the industry in California can obtain a freight classification which permits the shipment of the open-mesh bags, uncrated, in carlots. At present the bagging of oranges in consumer-packages of matching color is confined almost wholly to the Florida crop. Latterly, however, a beginning has been made of a practice of shipping California fruit in bulk by steamer, via the Panama Canal, and repacking in New York in the colored bags which have won their way in the market east of the Mississippi.

The color work on textile bags has been conducted principally at the laboratory of the Textile School of the North Carolina State College of Agriculture and Engineering which institution is carrying on research in fabric

designing and processing in cooperation with the U. S. Bureau of Agricultural Economics. No conclusive formulae have been perfected but the fact that, in approved practice of experimentation, dye has been added to the size solution at the time of finishing, is declared to simplify the whole problem of color conformity. The fact that this method of dyeing does not require additional processing further tends to hold costs at a minimum.

To the growth in favor of the duplex bag, so-called, is attributable no small portion of the latter-day capitalization of color and the further development expected in the immediate future. The duplex construction, which is covered by U. S. patent, the rights of the Government inventor having been assigned to the Secretary of Agriculture in the interest of the public, was devised by the Federal specialists working at the North Carolina laboratory. Before the Federal forces took up the problem various firms in the textile industry had sought to evolve a dual-purpose bag which would allow inspection of the contents at the point of sale and at the same time furnish a surface that would carry reproduction of a trade mark, or other descriptive or identifying imprint,—in colors if preferred.

The success of the commercial effort to provide a bag for the joint purposes of brand-bearing and commodity display was not as complete as might be desired. The manufacturers undertook to attain the desired end by sewing a section of open mesh fabric to a balancing section of close-mesh fabric. Costs were too high and the mechanics of the fabric merger presented difficulties. Government specialists felt that the solution would be found in a process of weaving, as a single unit, sections of open-mesh and close-mesh. This was the pattern finally perfected, each entity of bag material consisting of two sections of close-mesh fabric joined to one section of open-mesh weave and with one of the close-mesh sections placed adjacent to the selvage on the open-mesh side to strengthen the seam in sewing. Many of the examples of duplex bags now going to market are in all-over color where the product is adapted, as in the case, for example of nuts, onions, potatoes, etc., to display with a colored background, foreground, etc.

Not a few of the products which move into the markets in volume, via textile bags, have, from their very nature, been unresponsive to both the open-mesh and the duplex bags. In this category are flour, sugar, salt, corn-meal, coffee, rice, dried apples, oatmeal and other cereals. Ineligible for the new-found technique of display, packers of these commodities are, nevertheless, in many instances, having recourse to dyed bags. Color has been invoked with an eye to quickening the consumer-acceptance of bags that, after consumption of the original contents, will be turned to account as mops, dust-cloths, etc. Where it has been deemed unwise, for any reason, to invoke mass color for the bag as a whole, stitching in color is being resorted to render the bag recognizable and distinctive. Even in the food lines where the white bag is traditional, color has wrought a new deal, due to the prevailing policy of large-scale reproduction in color of packers' trade marks. Two-color and three-color work is becoming common in this trade mark execution.

Believers in the merchandising power of color in containers have recently suggested to Washington that the duplex process might, by alternative application, be adapted to the task of providing fabric bags, paneled perpendicularly or belted horizontally in contrasting colors. The plea is that this would place the dyed fabric package on a par, as to showmanship, with the best examples of cartons and paper wrappers that attain individuality by unique color combinations. If this suggestion is explored the Government will probably enlist the cooperation of Mr. C. S. Tatum, Manager of the Pilot Mills at Raleigh, N. C. who dyed and finished the fabrics that figured in the pioneering work with open-mesh and duplex bags.

Mr. R. J. Cheatham, Senior Cotton Technologist of the Division of Cotton Marketing sees possibilities in the use of colors in textile bags as the most visible and most convenient symbols of commodity grades. Already much has been made of the fact that the introduction of consumer bags has made it possible for growers and producers to grade agricultural products, with assurance that grade integrity will be maintained in the original package. An additional service in protection of consumers' interest would be performed if the translation of a standard schedule of colors in the bag fabrics were to render it feasible for the everyday purchaser at retail to determine at a glance the grade, quality-rating, or classification, of the content of any given bag. Use of color as grade indicia would, supposedly, be favored only by users of close-mesh fabrics who are not depending upon the color of the bag fabric to intensify the color effect presented by the packed product.

1934 Fall Shoe and Leather Colors

Significant advance trends in the Fall color picture have determined the selection of six high-fashion and five classic staple colors for women's shoes, it was announced recently by the Textile Color Card Association. These represent the official shades adopted by the joint committee of tanners, shoe manufacturers and retailers working in cooperation with the color organization.

In interpreting the new colors, it was explained the fashion and merchandising facts underlying the choice of each shade. Important newcomers in the high-fashion group are Marrona, French Mahogany, India Copper and Tailleur Green. Marrona is a highly significant version of chestnut brown—hence the coinage of the name from the French word, marron, meaning chestnut. It harmonizes perfectly with new browns of similar tendency in Fall costumes and keys with other colors as well, including greens. This shade, it was stated, is lighter than Indies Brown and reflects the Fall feeling for browns of higher value.

PROCEEDINGS OF THE
American Association of Textile Chemists and Colorists

APRIL 9, 1934

Officers of National Association

ROBERT E. ROSE, *President*
E. I. Du Pont de Nemours & Co., Wilmington, Del.

A. R. THOMPSON, Jr.—ALEX MORRISON, *Vice-Presidents*

WILLIAM R. MOORHOUSE, *Treasurer*
National Aniline & Chemical Co., Boston, Mass.

HAROLD C. CHAPIN, *Secretary*
Lowell Textile Institute, Lowell, Mass.

Councillors

JOSEPH F. X. HAROLD — **WILLIAM D. APPEL**
DONALD H. POWERS — **HUGH CHRISTISON**
CARL Z. DRAVES — **WALTER M. SCOTT**

President Emeritus and Chairman of the Research Committee
LOUIS A. OLNEY
Lowell Textile Institute, Lowell, Mass.

Council Representatives: Northern New England—Roland E. Derby, New York—Hans Meyer, Philadelphia—Harold B. Dohner, Midwest—Carl E. Bick

Local Sections and Their Officers

Northern New England Section
Leverett N. Putnam, Chairman, Worsted Division, Pacific Mills, Lawrence, Mass.
Clarence L. Nutting, Secretary, Arlington Mills, Lawrence, Mass.

Rhode Island Section
Heyward F. Lawton, Chairman, Borden & Remington Co., Providence, R. I.
C. Brian Wainwright, Secretary, Apponaug Co., Apponaug, R. I.

New York Section
Henry F. Herrmann, Chairman, General Dyestuff Corp., 230 Fifth Ave., New York City.
Thomas R. Harris, Secretary, Herrick & Voigt, 21 West St., New York City.

Philadelphia Section
William A. Stringfellow, Chairman, Ankokas Mills, Mount Holly, N. J.
Charles A. Seibert, Secretary, 39 Chestnut St., Salem, N. J.

Piedmont Section
George P. Feindel, Union Bleachery, Greenville, S. C.
John C. Robertson, E. I. du Pont de Nemours & Co., R. & H. Chemicals Dept., Greenville, S. C.

South Central Section
Harold Schroeder, Chairman, Dixie Mercerizing Co., Chattanooga, Tenn.
Harvie Bruce Kimbell, Secretary, Dixie Mercerizing Co., Chattanooga, Tenn.

Midwest Section
Eric F. Hempel, Chairman, National Knitting Co., 2165 South First Street, Milwaukee, Wis.
Elmer F. Smith, Secretary, American Aniline Products, Inc., 820 S. Clinton St., Chicago, Ill.

South-Eastern Section
Charles B. Ordway, Chairman, Alabama Polytechnic Institute, Auburn, Ala.
C. A. Jones, Secretary, Georgia School of Technology, Atlanta, Ga.

Lowell Textile Institute Student Section
Raymond L. Matthews, Chairman; Charles L. Daley, Secretary.

North Carolina State College Student Section
H. S. Blinens, Chairman; D. B. Hardin, Secretary.

Members should notify the **Secretary** immediately of all address changes

FEBRUARY MEETING, NEW YORK SECTION

THE Regular Meeting of the New York Section of the American Association of Textile Chemists and Colorists convened at eight-thirty o'clock, February 23, 1934, at the Chemists' Club, 52 East 41st Street, New York City, Henry F. Herrmann, Chairman of the Section, presiding.

...The routine business of the Section was transacted, in the course of which a motion was made, seconded, and unanimously carried that the parent body be asked to remit to the Section the sum of $150 to cover the present indebtedness and such current expenses as may arise..

Chairman Herrmann: Most of you have undoubtedly heard of the passing of Dr. Cadgene. Although he was one of our more recent members, at the same time he was one of our oldest friends. Mr. Wood has signified his desire to say just a word concerning him.

Mr. Wood!

Mr. P. J. Wood: Mr. Chairman and Gentlemen: I knew Ernest Cadgene for twenty-five years or more. We were chemists together in the American Silk Dyeing and Finishing Company, which is now the Hawthorne Branch of the United Piece Dye Works.

He was a man whom it was good to know. He was interested in his profession and always ready to discuss it in a friendly manner. He was an inventive genius. In his frequent travels abroad, he always brought back something which, if it didn't prove of practical interest, was at least of academic interest to any textile chemist.

I am sorry that we were not able to have him give us a paper at some time or other, because he had had a very varied experience.

He was a graduate of the University of Zurich. He attended the Polytechnicum and afterwards took his doctorate at Zurich and obtained some of his experience with his father in Switzerland.

When he came over to this country he was employed by the Weidmann Works in Paterson which as many of you may not know was the largest silk skein dyeing institution the world has ever seen.

After a short time there, he entered the American Silk Dyeing and Finishing Company and was there, I think, three years. He was there when I left there to go to Nyack.

He then founded the Cadgene Silk Dyeing and Finishing Company, which was afterwards the Royal Piece Dye Works, and later the Royal Branch of the Associated Silk Dye and Knit Works. After being there I think four or five years he started his own concern, known as the Lyons Piece Dye Works, with his father-in-law,

Mr. Herbiach Lyons, who was also a world-famed dyer and finisher. This plant has continued to this day and still continues, of course.

Of his personal attributes, I will say that the chief one was his friendliness. He had a great many friends not only among textile chemists but among musicians because he himself was an accomplished violinist and a great lover of music. The night that he died he had been attending the opera here in New York.

I think the industry has lost one of its outstanding members, because he did a great deal to further the interests not only of his own personal business but of the entire industry and I would ask you, Mr. Chairman, if it is in order for me to so move, that we stand one moment in silence to honor his memory.

Chairman Herrmann: I will be glad to receive that motion, Mr. Wood.

. . . The motion was seconded and carried. The members thereupon arose and stood in silent tribute to the memory of Dr. Ernest Cadgene . . .

. . . Continuing with the routine business of the Section, Chairman Herrmann appointed the following Committee on Arrangements for the next Annual Convention to be held in New York:

Messrs. P. J. Wood, Jos. F. X. Harold, George Baxter, Ephraim Freedman, J. Lange, Giles Low, R. Fitzgibbon, Charles C. Knights, P. J. Kennedy, Robert R. Sleeper, Robert Gaede, Jr., Albert J. Royce, H. D. Smith, B. L. Hathorne, A. P. Howes (cooperating).

Chairman Herrmann: If there is no other current business we will turn to the technical portion of our program.

Our Program Committee had several disappointments in preparing the program for this evening, one of which was a last minute cancellation and I therefore feel that I should say even before I call on our speaker that we owe him a debt of thanks for having hastened the preparation of his talk which had really been contemplated for a later meeting. Under the circumstances, Mr. Sweet's talk is going to be somewhat less formal than it would otherwise have been if we could have given him the five or six extra weeks to which he was really entitled. I know that Mr. Sweet is well equipped to handle the subject and I take great pleasure in presenting him to you.

Mr. Sweet! (Applause.)

Detergents*

Old and New

By **HAROLD A. SWEET**

General Dyestuff Corp.

THIS matter of detergents is a very interesting subject. We come across them so often in our daily lives, especially in our advanced civilization, that it is hard for us to realize that we did not always have detergents. However, in ancient days they were practically unknown, especially soaps. Clothing was cleaned by merely pummeling or rubbing together under water. Sometimes it was placed in a pit, covered with water, and worked with the bare feet, loosening the dirt in that way.

The Greeks, as we know them, are supposed to have had an advanced degree of civilization and yet they did not have soaps. There were certain vegetables which when dried and powdered gave a certain sudsing effect or foaming and this was used in place of the soap as we know it today or detergents. They probably had more or less of a mechanical action in releasing the soil, and cleansed in that way.

The Romans were probably the first to use any detergent of any kind and this was made from decomposed urine. The active detergent in this case was the ammonium carbonate.

The "fullones" of Rome, who were a class of people licensed to do laundering, used what we would probably call Fuller's earth, and had complete control of the mining of this commodity.

There is some contention among the historians as to who were actually the first users of soap, which was the forerunner of our present type. It was either the Gauls themselves, the Phoenicians who settled in Gaul in 600 B. C., or the Germans. The records show that the beginning of the use of soap took place from 600 B. C. to 200 A. D.

Little is known of the history of soap making up to the fifteenth century. At that date Germany was actively

*Presented at meeting, N. Y. Section, Feb. 23rd.

engaged in developing soap and in southern France soap was being made from vegetable oils. These soaps were to become famous as the "Marseilles Soaps." This was the beginning of the soap made from palm, olive and cocoanut oils. The time of introduction of soap making in England is indefinite, but it was probably about the fourteenth or fifteenth century.

With the coming of the Le Blanc process for the manufacture of soda and caustic alkalies, in about 1800, great advancement was recorded in soap manufacture. The early American housewife made her soap from fat drippings and wood ashes from which was derived the necessary lye. From this point, the advance in manufacturing methods and quality obtained has been very rapid.

The textile industry has probably had more to do with the perfecting of soap making than many people realize. With the demand for more efficient cleansing before dyeing and processing of fabric, research was stimulated and special types of soap appeared on the market. However, for the same reason that caused the necessity of research to produce a finer soap, the deficiencies of all soaps were realized. They are obtained by saponification of animal and vegetable fats consisting of the glycerine esters of fatty acids of high molecular weight. Of all the fatty acids used such as stearic, oleic and palmitic, the oleic is the most soluble and the most stable.

Soap has various properties such as lowering of surface tension and subsequent wetting power, excellent emulsifying action, and use as a lubricant. It is probably all of these which give soap its property of a detergent. It was formerly believed that the hydrolysis of soap liberating free alkali had much to do with its detergent power. However, this has been disproved by showing what a small percentage of free alkali is liberated in a typical soap solution. There are different theories as to the detergent action of soap. The principal ones are the colloidal, emulsification, lubricant, and Brownian movement theories.

With increased research on textile processes, soap was shown to have the following disadvantages:

1—Forming insoluble calcium and magnesium soaps when applied in hard water.

2—Instability in a process where acid or alkali is present.

3—Reaction with various metal salts or ions giving precipitates of the corresponding insoluble soaps.

4—Disassociation in solution giving free alkali.

It is not necessary to elaborate on the problem of hard water other than to recall that fifteen pounds of soap are consumed per one thousand gallons of water at twelve degrees hardness; streaks of insoluble calcium or magnesium soap appear after dyeing; rancid odors result on storing such goods; general appearances are dull; and "feel" is harsh or sometimes even gummy.

The need for a penetrant in an acid bath was long felt and also for a more efficient cleansing treatment of fiber than by alkali. Some fibers are sensitive to free alkali and the dissociation of soap causes considerable harm. Small amounts of different metallic salts are often accumulated in process water. When combined with soap they are sure to leave specks or streaks on the material.

Sulfonation

The above disadvantages of soaps for textile use led to research which developed the first step away from soap, namely the sulfonation of oils instead of saponification. The first oil to be rendered soluble by sulfonation was castor oil and the resulting product was the now famous Turkey Red Oil. This is a method for bringing these fats into a form soluble in water by sulfonating them with sulfuric acid. With the advent of the Turkey Red Oil it was thought that a substitute had been found for soap in the textile industry. However, it was soon discovered that although its calcium and magnesium salts were moderately soluble, the Turkey Red Oil was a poor detergent. It also lacked the property of imparting the soft feel to fabrics that soaps do. The success of Turkey Red Oil for other purposes led to more intensive research along similar lines with higher degrees of sulfonation into the Monopol Brilliant Oils and finally to the Prestabit Oil the properties of which in hard water are excellent. It was found that the higher the degree of sulfonation the greater the stability in hard water, but the less the value as scouring agents. The principal use of this type of compound has been as a wetting agent. The stability of these higher sulfonated oils was also excellent in regard to acid, alkali and metallic salts.

The point to be remembered is, that these early attempts to improve soap really led to the creation of entirely new products which possessed interesting and commercially valuable properties but unfortunately lacked detergent properties and therefore missed the mark. These new products achieved some of the much sought for stability but at the sacrifice of the fundamental soapy character.

Not only oils but fats and their derivatives, also in a few cases organic solvents, were either used as basic materials for sulfonation or combined in the final product of the sulfonates. Sulfonation was carried out as far as possible and also various condensations of the different fatty bodies were formed. The ultimate goal was to prepare a material with soap-like properties having perfect stability against hard water, acids, alkalies, metallic salts and with the highest wetting power. These ends have been realized but detergency lost and these products today belong to a different brand of chemistry from soap.

It is only natural to expect combinations of all these products to be attempted so as to capitalize the virtues of each. Soaps are still in use which contain organic solvents such as naphtha, pine oil, etc. Some of these are

very serviceable but they all retain the inherent instability of soap because their fundamental character remains unchanged.

Thought has been to get something along the soap line which will do away with the disadvantages which soaps have always had. However, we cannot lose sight of the fact that soaps are inexpensive and probably always will be because the cost of manufacture is low, the equipment is fairly inexpensive and the raw materials cheap and plentiful. Their price may rise at times and the price of soap may increase a few cents a pound but the fact remains, that there has been very little change in the price of soap in the last few years in relation to other commodities.

The Nekal or naphthalene sulfonate derivatives were the next research development but they also lacked the soap powers of detergency the same as the sulfonated oils. The fatty qualities of the soaps seemed to give the textiles the desired soft feel. The naphthalene sulfonate type is still the leading wetting agent on the market and its use in many fields outside of textiles is increasing almost daily. It has more or less displaced the sulfonated oils in certain branches of the textile field but still does not meet the demand for a soapy material without the disadvantages of a soap, which would give the soft feel to textile material and also possess detergency.

With continued research on soap manufacture it was found that it is the carboxylic group, COOH, which is responsible for the deficiency of soap. Investigative work was then started following the idea of starting with the basic soap making materials, the saponifiable fats and oils, which were known to have the desired properties for textile use, and block off the COOH group which causes all the trouble.

With the sulfonated oils, the sulfonation takes place in the fatty acid component. It was found, that starting with certain sulfonated compounds and forming the fatty acid esters, the troublesome COOH group was blocked. The products obtained were very soluble in water and retain the scouring effect of soap as well as giving the much desired soft feel to fabrics. It has not been possible to obtain these substances by direct sulfonation, but it is necessary to produce these sulfonated fats in a synthetic way by making esters from different fatty acids with the sulfonated compounds.

Igepons

These products are known commercially as the Igepons and for the sake of simplicity, we will refer to them by this name. The first material of this type to appear was Igepon A. It is an oleic acid ester of a sulfonated aliphatic compound. With further research, it was found possible to place another material of similar structure on the market, namely Igepon T. This is also a fatty acid ester but of a sulfonated aliphatic amido compound. The difference between the two will be discussed later.

Another method of removing the troublesome COOH group has been developed by transforming it into the harmless CH_2OH or alcohol group. This material may be sulfonated and from these investigations, we have the sulfonated higher alcohols which are on the market today in considerable variation depending on the number of C and H atoms of the original body started with. These changes are brought about by hydrogenation under high heat and pressure with the aid of catalysts.

Igepon A finds its greatest use in low temperature operations where it is necessary to have an efficient detergent, such as in wool scouring. The proper washing of raw wool is a very delicate procedure as everyone knows. Wool is chemically a complex combination of amino acids with a pH value of slightly below 5.00. The scouring bath mixture of soap and soda ash is, of course, on the alkaline side and should always be kept below pH of 11.0. By substituting part of the soap and soda ash with Igepon A, the wool may be perfectly cleaned without danger of injuring on account of too high pH. Even when the water supply is soft, the color of the wool is whiter and there is an added fluffiness to the stock.

It is not difficult to imagine the advantage of the Igepon, if the water supply is hard. Often the raw wool contains lime remaining from the process of removing it from the hide. With soda ash forming soaps from the fats and oils in the wool plus the soap used for cleaning the stock we can appreciate the amount of insoluble soaps which will be occluded in the wool fiber. An addition of Igepon A to the scouring bath prevents this. It allows the soap to complete its cleansing duty instead of being lost as insoluble soaps and allows it to be rinsed much more thoroughly and quicker from the wool. The raw wool at the completion of the scouring operation is clean, white, fluffy and open in excellent condition for spinning or dyeing. The insoluble soaps remaining in the fibers have long been a source of trouble in the dyeing operation. The solving of this latter difficulty and the elimination of the possibility of loss of tensile strength due to high pH of the scouring bath, places the Igepon A as a specific for fine wool scouring.

For the scouring of woolen goods in the piece, Igepon A is an excellent aid and by allowing reduction of time of scouring as well as soda ash concentration reduces the danger of felting. Piece goods scoured by aid of Igepon A tend toward more uniformity and level dyeing.

Igepon T is more appropriate for use with higher temperatures and hence finds more of a place in the cotton, rayon and silk industries where the general processes involve higher temperatures. It has excellent stability

against acid and alkali even at the boil. The Igepon T is also a very efficient penetrant as well as cleansing agent and detergent.

In a bleaching operation, its stability to lime enables the Igepon T to be used in the bleaching powder liquors. It is also stable in sodium hypochlorite baths. The natural softness of the fiber is retained and the uniformity of the bleach results in even dyeing. A soft, smooth handle to the material is also produced.

In kier boiling, spots caused by lime soaps are eliminated by the addition of small amounts of Igepon T to the liquor. The concentration of alkali, length of boil and pressure may all be reduced, allowing less harm to the fiber.

For dyeing cotton and rayon the wetting and leveling action of the Igepon T is of great assistance and even the most delicate shades are obtained with ease. The material may be given a short preliminary cleansing with the Igepon T or it may be added direct to the dyebath. With the vat dyestuffs, the Igepon T is added direct to the bath. Its stability to acids, salts and oxidizing agents allows the Igepon T to be used with acetic or formic acid and the usual oxidizing agents. With the Naphtol colors, the shades are more brilliant and faster to rubbing.

The Igepon T is an excellent addition to any finishing bath leaving a soft, smooth finish to the material. Often when soap is left on the material as a finishing aid, a disagreeable rancid odor develops. The insoluble hard water soaps deposited within the fiber cause a harshness and sometimes gummy feel.

In the printing trade, the Igepon T is used with or without soap for removing the different salts and thickening agents in the after-treatment. A non-alkali cleansing agent is most desirable in the treatment of all but vat dyes and naphtol products. Again the danger is eliminated of insoluble metallic soaps being formed from the salts used in printing operations. The color prints are brighter and the white discharges are much clearer.

Igepon is an excellent addition to soap and mixtures of the two are in regular use for purposes where a small quantity will improve the usefulness of the soap. It is not the purpose of the Igepons or sulfonated alcohol type of material, to displace soap. This is economically impossible at present day prices. Soap has an important place in the home and industry, and always will have. The ultimate goal to be achieved with these new materials is the point at which they will render the utmost service at the minimum cost. They will be used without the addition of soaps for washing the fine silks and woolens, and in varying proportions with soap and mild alkali in hard water districts for general laundry work. A laundry using hard water may find that the cost of using a small amount of Igepon in the wash wheel, will more than be compensated by the amount of soap saved. In addition the clothes will not contain the insoluble hard water scum which tend to cause white material to be gray and develop the disagreeable soapy odor on standing. It will also be found that less rinse water will be required and the bleach will be much more efficient.

As an example where mixtures with soap are very effective, we might mention the rug cleaning plant in hard water districts. A small amount of Igepon incorporated in the soap jell prevents the formation of insoluble soaps which are impossible to remove from the wool fiber. Rugs containing this insoluble deposit become soiled much quicker and after a time develop a rancid odor. The colors are also dull and the wool fibers are often stiff instead of being light and open. Less rinse water is used in removing the soap suds from the rug.

The same experience takes place in the washing of blankets as with rugs. There is no danger of shrinkage, the colors are bright, the "feel" of the blanket is soft, fluffy and there is an absence of disagreeable soap odor.

I have a few sample bottles here to show the reaction of the different metallic salts with soap and Igepon. That is one special feature of this class of material, the Igepons as well as the sulfonated alcohols and it is interesting to note the reaction of the soap and the Igepon with the different salts. I have several soluble salts here and I will just add a small amount to the Igepon solution and then to the soap solution.

First, we might take a look at a one-tenth per cent Igepon T solution in a water forty degrees Clark hardness and a one-tenth per cent soap solution, giving an idea of the formation of the insoluble soaps.

(Demonstration of effect of adding solutions of calcium, barium, magnesium, potassium, iron, copper and aluminum to Igepon and soap solutions showing no precipitate with Igepon and characteristic one with soap.)

Then it is interesting to note the effect of muriatic acid on soap and Igepon. This is the same one-tenth per cent solution of the soap and the Igepon, and a ten per cent solution of muriatic. You can see the precipitate with soap and the lather which still persists in the Igepon T after the addition of the acid.

Mr. Chairman, I guess that is about all I have.

Discussion

Chairman Herrmann: Well, that is a good beginning, Mr. Sweet. (Laughter.)

The maximum benefit will come from the presence of Mr. Sweet here to answer any questions that his little laboratory tests may have raised in your minds. It was impossible, of course, for Mr. Sweet to bring a dyehouse or a finishing plant here. He has tried to convey to you, however, in a manner that will arouse your interest the simple reactions that occur when soap is brought in contact with various impurities, salts or chemicals of different descriptions, which are actually encountered in every-day industrial operations.

Mr. Sweet will welcome any questions pertinent to the subject you may care to ask. There is much to be said about soap and about these various other articles—the sulfonated alcohols and these aliphatic esters—and now is the time to discuss them.

Mr. Geo. A. Stevenot: Mr. Sweet, what effect would these tests have if an equal amount of the Igepon had been added to that soap? In other words, all those show a great precipitate in the case of the soap and practically none in the case of the Igepon. Now, suppose you had had Igepon again with the soap—

Mr. Sweet: That reduces the effect a good deal. Of course, you will always have some precipitate. Igepon doesn't entirely prohibit it, but it does in every case reduce it. For instance, on the calcium and magnesium, it practically prohibits the formation of calcium and magnesium in soluble salts. On some of the other metallic salts, it is not quite so evident, but it helps in all cases.

Mr. Schmidt: Mr. Sweet, I want to ask how much do you have to put in in order to overcome that? Do you have to use half Igepon or do you use five per cent based on the quantity of soap in order to get the maximum protective action against precipitation?

Mr. Sweet: You mean in the hard water, for instance?

Mr. Schmidt: Yes.

Mr. Sweet: I haven't all the figures with me but can say, that an addition of ten per cent of the weight of the soap being used, suffices in most cases to prevent precipitation of "hard soaps."

Dr. M. T. Bogert: Do I understand correctly that this depends primarily on the solubility of these soaps that you get, i.e., Igepon with the heavy metals, in the water. It does, does it not?

Mr. Sweet: That is really what it is.

Dr. Bogert: I would like to ask also whether you have had any experience with sulfonated abietins, rosin products, and if so what the result has been. They have been suggested as you know as wetting agents or penetrating agents and perhaps also as detergents, rosin distillation products which have been sulfonated and used in that way.

Mr. Sweet: Yes, I have seen reference to it in the literature but I haven't had any experience with them at all. I know that they are recording very excellent wetting properties and also some detergent properties but I don't know, in comparison with the Igepons or the Gardinol type, that is the sulfonated alcohols, how they stand up.

Dr. Bogert: The reason I ask is that there are certain phenolic compounds that are obtainable from wood products. I am thinking particularly of retinol derivatives. I wondered whether they had been used.

Mr. Sweet: I have never heard of them.

Dr. Bogert: Apparently it is the alcohols that have been used rather than the phenols.

Mr. Sweet: Yes, that is true.

Mr. Ephraim Freedman: Mr. Chairman, I believe there has been a product on the market for quite a number of years known as Sulfophenol that has been used as an antiseptic. That has been known for a good many years. I remember it twenty years back, or more.

Dr. Bogert: Has that any use in textiles?

Mr. Freedman: I don't think it has ever been used for textiles. Its use has been chiefly in the medical field.

Dr. Bogert: The trouble with all of those sulfonated products, speaking now from the medical side rather than the textile side, Mr. Chairman, is that as far as the physiological effect is concerned the sulfo group is a detoxifying group and sometimes they detoxify the compounds so successfully that they are left without any physiological effect whatsoever. The reason for that is that as soon as you sulfonate a compound it washes through the system too quickly to have any considerable physiological effect. While occasionally you have to resort to it where a compound is highly toxic, still you have to be very careful not to carry it to the point where you eliminate all the physiological characteristics. That was one of the original compounds. The phenol was sulfonated in order to reduce the toxicity.

Chairman Herrmann: I think possibly Dr. Bogert has given us a parallel here on what has been happening to the folks who were trying to sulfonate oils. They rendered them so soluble and so penetrating that they lost all their detergent properties. If such a thing had been possible as to sulfonate a soap and still retain the soap character, maybe this talk on Igepon might not have been given tonight (Laughter). Unfortunately, in an attempt to saponify soap you lost both the soap and the sulfuric acid and probably got nothing but a mess, and the endeavor to obtain the combined properties of the soap and the sulfonic acid group is the answer to what Mr. Sweet is explaining tonight.

Mr. Stevenot: Mr. Sweet, you mentioned before that the sulfonated castor oils didn't have much detergent power. Do you find that the sulfonated olive oils have any more or any less detergent action than the castor oils?

Mr. Sweet: I think they are about the same. There is really very little detergency in them. It is merely the wetting power and any detergency that results is probably due to the wetting action.

Mr. Stevenot: Do you think they have superior wetting action?

Mr. Sweet: No, I wouldn't say they had superior wetting action but up until the time of the development of the materials of the Igepon and Gardinol type, they were the wetting agents that were used in the textile industry where they wanted more or less of a soft "feel" or "handle" after the processing of the goods.

Mr. P. J. Wood: Mr. Sweet, as I understand it the chemical difference between Igepon A and Igepon T consists only of a difference of an amido group which the

Igepon A does not have. What is the difference in the properties of the two products? I don't think you have touched upon the difference in their properties or their application.

Mr. Sweet: Well, the Igepon T is more stable under acid and alkali conditions, especially at the boil, and its use is mainly in dye baths, kier-boiling, mixtures, etc. It really hasn't any superior effect in the prevention of the formation of the hard water soaps. That is, its prime importance is its stability in acid and alkali, as compared with the Igepon A.

The Igepon A is an excellent detergent and is used for low temperature wool scouring rather than the Igepon T. It has a slightly stronger detergent action than the Igepon T, but it has the disadvantage of breaking up with the acid and alkali on long standing. If it is necessary to make a stock solution of the Igepon, we always recommend the T rather than the A, and it is the same with a mixture with a soap or with an alkali of any kind—the T is always used.

Mr. Louis S. Zisman: At the beginning of your discussion, you mentioned the very desirable lubricating properties of soap and the later researches to develop substitutes that would be more desirable and still maintain the lubrication power. Would you say that Igepon had a better effect, as far as lubrication is concerned, than oil, for example, or sulfonated castor, or how would you compare them?

Mr. Sweet: I defined the detergency of soap as the result of a combination of properties such as: 1—wetting power, 2—emulsification and 3—lubrication. We have little reason to criticize soap from the standpoint of lubrication but consider the Igepons at least as good.

Dr. Bogert: May I ask another questions?

In the old days when I went to college, I was taught that one of the uses for rosin was as a detergent, particularly in laundry soap; that the great value of the brown laundry soaps we used to use was their detergent property. Have rosin and abietins disappeared completely from use as detergents in soaps such as would be used in the textile industry, for example?

Mr. Sweet: I think they have. I think possibly Mr. Herrmann may be able to enlighten you on that.

Chairman Herrmann: I am not an authority on the subject but I know they are still being used in many yellow laundry soaps, but I think more or less as a filler.

Dr. Bogert: Not on account of their detergent properties any more?

Chairman Herrmann: Well, they have a certain amount of detergency but I think they are used mostly because of their cost. (Laughter.) That is my impression. You certainly don't find them in the finer textile soaps. I think Mr. Wood will bear me out when I say that the silk industry doesn't use soaps containing rosin. I think Mr. Hart will probably be able to answer that question.

May I ask Mr. Hart what he thinks of the merits of rosin as a detergent?

Mr. Hart: In tallow soaps they use a great deal of rosin oil to make them more soluble. Cost, of course, is a prime consideration.

Mr. Harris: Perhaps I can help you out on that question of rosin.

It so happens that rosin as a soap has considerable lathering power. Having that lathering power, it helps out considerably, since your laundry soaps are generally of the tallow type.

Of course, the price consideration is a factor.

Another thing is that the yellow color is associated with the laundry bar of soap and taken all in all you have the association there.

With regard to that other question about the sulfonated abietic acid, the sulfonated rosin materials, I have tried those out and they are not comparable with the Igepons or other wetting agents that we now have.

Chairman Herrmann: Thank you, Mr. Harris.

Mr. John J. Sokolinski: There are some mills that are using just straight rosin, saponified rosin, without any tallow or any base of that kind in it, just a straight, as they term it, rosin soap. It is approximately thirty per cent rosin. And as Mr. Harris says it is used primarily because of its lathering properties.

Chairman Herrmann: I have heard somewhere that some of these rosin soaps are used more for finishing purposes.

Mr. Sokolinski: Yes, as a binder.

Chairman Herrmann: As a binder. They decompose them with acid and reprecipitate the rosin and get fillers, and all sorts of effects like that. I believe even the paint industry uses them for that purpose, improving the pigments by precipitating a certain amount of almost colloidal rosin out of them by decomposing a rosin soap. In fact, some patents have been taken out on the removal of bronziness from pigments which are of less value when they have this peculiar reflex than they are with their natural top tone. Some pigments in highly concentrated form are almost golden in color, whereas their natural color should be, we might say, a vivid scarlet, and that so-called reflex reduces the value of the top tone. With the introduction of a small amount of rosin soap the scarlet color is obtained and the reflex is lost.

The printer may have occasion for a reflex ink. He uses it for certain purposes. The requirement for the true color is far greater. But I have always associated the rosin soap with an article of economy. I may be wrong about that.

The fact remains that we are on the threshold of a new soap chemistry. The very question that you have asked is the key to the whole discussion. If chemists in generations gone by had known on what properties soapiness depended, they might have been further along by

this time, but they took it all for granted. I think from the time that the first soup cauldron spilt into the hot ashes and the fat content was saponified by the carbonates formed there and someone found it possible to wash his hands in the mess, there has been very little actual, constructive, research work done on soap. They have purified it. They have made it cheaper. They have found other articles to saponify but they really haven't changed the basic character of the soap very much. Within the last year or two there has been more fundamental work done along those lines than in all the preceding generations, and what you mention here tonight I think is very stimulating in that it shows that possibly there is a whole new field to be opened.

Dr. Bogert: I always like to come back to the same old dictum, that scientific research is not merely the price of progress, it is the price of existence today. It doesn't make any difference what the industry is.

Mr. Hart: I believe it has been claimed that in order for any of these sulfonated products to act as detergents the sulfate group must be added onto the first carbon atom of the chain. Ordinary Turkey Red Oil is a sulfonated product but the sulfate group is in the middle of the chain. It has been more or less established that where the SO_3 group is added onto the first carbon chain, it acts as a detergent. That is true in the case of the Gardinols and other sulfonated alcohols and in the case of the Igepons.

The manufacturers of sulfonated abietins, it is my understanding, do not claim any detergency for them.

Mr. Ephraim Freedman: Mr. Chairman, I want to ask whether the Igepons have any deteriorating action on textile fabrics when left in contact with them over long periods of time.

Mr. Sweet: I don't believe so. I never heard of any.

Chairman Herrmann: They are only two years old, Mr. Freedman. Is that long enough? (Laughter.)

Mr. Freedman: What I had in mind was this: from the consumer angle, there are a number of preparations on the market that are sold to the public as rug and tapestry and upholstery cleaners. They are frequently used on furniture, on rugs and tapestries in the home. Many of these products are made of soap in combination with washing soda or trisodium phosphate. Some of the triethanolamines have entered into some of them. Still others are combinations of some of the triethanolamine soaps and solvents.

When these products are used and the article is not thoroughly cleansed—in fact, it is quite impossible to clean a rug thoroughly while it is on the floor, without giving it a thorough rinse—the soap remaining in the rug is likely to become rancid and affect not alone the dyestuff but the fiber.

I was wondering just what effect the Igepons would have if they were substituted for these soaps in such cleaning compounds as I have mentioned.

Mr. Sweet: I doubt very much if there would be any bad effect from the Igepons merely because of the fact that they won't hydrolyze, especially the Igepon T, even in acid, under normal conditions. If it is boiled for a considerable length of time at high temperature in a strong acid, it probably will go back into its original components, or something similar. But you can't compare them, on standing, with your soaps or any of the other materials which will hydrolyze.

I have never heard of any deleterious effect on the fiber when Igepon was used in that way. In fact, if a small amount is left on the fiber and it isn't rinsed out, it cannot harm the wool in anyway at all. For instance, I mentioned rug cleaning, Igepon makes the soap more soluble and it is much easier for the rug cleaning plant to turn out a cleaner rug in less time, using less soap and water.

Mr. Freedman: Could they eliminate the use of soap entirely?

Mr. Sweet: Yes, that can be done; cost is the deciding factor. Igepon also works very nicely on a cotton rug—just the Igepon alone. It keeps the colors more brilliant. In fact, if you use any soap on a cotton rug, like a hooked rug or similar rugs, the colors are much duller when washing is complete and often run. There is no running of colors with Igepon and it has a good detergent effect also.

Chairman Herrmann: I would just like to suggest that Mr. Sweet answer one further point in connection with that last question and that is the relation of pH of an average soap solution and an Igepon solution used plain, considering the fact that free alkali is the injuring factor in soaps that are allowed to lie for any length of time on a woolen fabric, whether it be a carpet, a blanket, or a fine sweater. In scouring this article with Igepon, what would be the amount of alkali present, as compared with soap?

Mr. Sweet: Well, any soap approximately has, I would say, a pH of eight and a half to ten. The Igepon is practically neutral. In fact, we call the pH value seven. With a wool fiber, the nearer you can come to a neutral washing solution, the better its effect on the wool fiber. The weakest of the soaps will probably run eight and a half or nine.

Does that more or less answer your question?

Chairman Herrmann: Yes, considering the fact that alkali is injurious both to the wool fiber as well as to the colors. There is a certain amount of running of color when you wash in the presence of alkali and there is much less running when you wash neutral and, as I gather from these tests here, the Igepon lathers and exerts a detergent action even in the presence of acid or lime.

Mr. Freedman: I would like to ask the speaker what inhibitory effect, if any, Igepon has on rust formation.

Mr. Sweet: Well, it would at least prohibit the formation of any insoluble iron salt. If there is any formed, it will be soluble.

I suppose you mean in more or less a moist condition?

Mr. Freedman: No, I am considering the use of, let us say, a solution of Igepon in a cleaning establishment, and the storage of the solution in, let us say, an iron tank.

Mr. Sweet: Well, it is rather difficult to say whether it will have any prohibiting effect there. I doubt very much if it would have. It would have a dispersing effect and possibly a better settling effect. You wouldn't have the coagulation of your iron rust, iron hydroxide, which there probably would be in that case. Whether it would prohibit it or not, I cannot say because really that comes more or less from the oxygen dissolved in the water, and I doubt very much whether Igepon could stop that. But it would at least disperse it and enable you to rinse it out more thoroughly if it happened to come in any fabric.

Mr. Freedman: Thank you.

Mr. Harris: Mr. Chairman, may I ask Mr. Sweet another question?

If you were to take those two solutions, the one with the soap, the other one with the Igepon, to which you have added the aluminum chloride, and suppose you were to heat those, what would happen to the precipitate in either case?

Mr. Sweet: I don't know that anything would happen to it. I have never had occasion to test that out but I don't believe it would be any different.

Mr. Harris: Don't you use that for waterproofing or removing waterproofing?

Mr. Sweet: Use the Igepon for removing waterproofing?

Mr. Harris: Yes.

Mr. Sweet: I don't know. I have never come across that use for it.

Chairman Herrmann: Did you mean to heat each solution by itself or to mingle them?

Mr. Harris: No, not to mingle them, but to heat them, each one by itself.

Chairman Herrmann: Don't you think the precipitate in the case of the soap would become stronger, more packed?

Mr. Harris: Then suppose they were heated together —that is another thing.

Chairman Herrmann: Yes. I believe that tests have been made, plenty of them, showing that the Igepon will disperse the coagulated aluminum, stearate, oleate, or palmitate. I think Mr. Sweet touched on that, especially when he dealt with the question as to how much Igepon would have to be added to a soap solution in order to disperse lime salts. We have encountered cases where twenty per cent seemed to have a complete inhibitory effect on water of the maximum degree of hardness you would ordinarily encounter.

Mr. Harris: Would that actually dissolve, say, the aluminum salts?

Mr. Sweet: I don't know about the aluminum, but in the case of calcium and magnesium, and the hard water soaps there is a certain amount of solvent action, and also a dispersing action which cause them to be more soluble. How much of it is solvent action and how much of it is dispersing action I don't know but you get the effect of removing, and possibly that is what you mean by removing the insoluble aluminum salts. I misunderstood the question. They can be. There is no doubt some solvent effect and along with that, whether it is complete solution, or part solution, or partly dispersing, I don't know.

Mr. Stevenot: Is Igepon soluble in dry solvents?

Mr. Sweet: No, it is not soluble in dry solvents. It is water soluble, a material that is not soluble in the organic type solvents.

Mr. Wood: Mr. Chairman, to descend from the sublime of this somewhat technical discussion we have been having, to the ridiculous of everyday living once more, I would like to ask a practical question, and that is: At what temperature is it possible to get the highest degree of detergency of these two products exhibited?

Mr. Sweet: We recommend for Igepon A what we call medium temperature, 120 degrees Fahrenheit to 130 degrees. If you go higher than that, it is possibly better to use the Igepon T, especially if it is a long process. However, the Igepon A is used between 90 degrees and 130 degrees with very good results.

Mr. Wood: How about the T?

Mr. Sweet: At the boil.

Mr. Taylor: The question I had in mind has already been partially answered; that is, with regard to the effect of the pH. I am wondering if these Igepons were incorporated in the ordinary soap in bar form if they will have an appreciable effect on the pH of soaps for ordinary household use. There are thousands of people here in New York City who don't have soft water who are suffering under the handicap of using a hard water soap, which is rather irritating to a delicate skin. Do you know whether that has been tried out in regard to the physiological action, using a certain per cent of these Igepons in ordinary soap?

Mr. Sweet: No, I don't know whether there are any figures available on that. Of course, it would not be so much the lowering of the pH in that case as it would be the amount of Igepon necessary to prevent the formation of the insoluble hard water soaps, thus giving the lathering and the detergent effect of the soap itself. I doubt very much if it is the idea to lower the pH in that case.

Mr. Taylor: Many of these hard water soaps are pretty strongly alkaline.

Mr. Sweet: I doubt very much if there is so much

alkali, but they are mostly, I think, the cocoanut oil soaps, which lather and are more soluble in hard water. Probably their detergency is not as strong as that of the tallow soaps. That is why they are used mostly in households as a personal soap rather than as the laundry type. Of course, the amount of Igepon necessary to be used with the soap depends entirely upon the hard water in your district. Much less is necessary to be used with a hard water of five or six degrees Clark than would be in the Middle West where it is perhaps fifty or sixty degrees Clark hardness.

Chairman Herrmann: Are there any further questions? If not, it is ten o'clock exactly, and I am going to adjourn the meeting. Before doing so I am going to call for a rising vote of thanks to the speaker of the evening.

. . . A rising vote of thanks was extended to Mr. Sweet, following which the meeting adjourned at ten o'clock . . .

CORRECTION RE "PRINTING PASTES"

In the paper "A Fundamental Study of Printing Pastes" which appeared in the last issue the following references should have appeared with those published on page (89) 179 of that issue:

[7]Herschel and Bergquist, ibid, 13, 703 (1921).
[8]Porst and Moskowitz, ibid, 14, 49 (1922).
[9]Porst and Moskowitz, ibid, 15, 166 (1923).
[10]Caesar, Am. Dye. Reptr., 21, 278 (1932).
[11]Caesar, Ind. Eng. Chem., 24, 1432 (1932).
[12]Rogers and Sabin, ibid, 3, 737 (1911).
[13]Green, Proc. Am. Soc. Testing Materials, II, 20, 451 (1920).
[14]Green, Ind. Eng. Chem., 15, 122 (1923).
[15]Bingham and Jacques, ibid, 15, 1033 (1923).
[16]Rhodes and Wells, ibid, 21, 1273 (1929).
[17]Rhodes and Jebens, J. Phys. Chem., 35, 383 (1930).
[18]Green and Haslam, ibid, 17, 726 (1925).
[19]Green and Haslam, ibid, 19, 53 (1927).
[20]Williamson, Patterson, and Hunt, ibid, 21, 1111 (1929).
[21]McMillen, ibid, 23, 676 (1931).
[22]Bingham, "Fluidity and Plasticity," 1922, McGraw-Hill Book Co., New York.
[23]C. Z. Draves, private communication regarding unpublished research.

UNEMPLOYMENT REGISTER

(Continued from page (104) 208)

yarn; woolen, worsted and union piece dyes on both ladies' and men's wear; wool, cotton, shoddy and mohair raw stock. Age 33, married, will go anywhere. References.

B-9

Experience—Hosiery dyer with fifteen years' experience on high grade silk hosiery; familiar with all types of machines. Age 43, married. Will go anywhere.

B-10

Experience—Ten years in top dyeing for fancy men's wear trade, knitting trade and sports wear; also piece dyeings on men's wear, crepes, sports flannels and tropical suitings; also several years association with commission dyeing trade doing tops, worsted skeins, cotton skeins, piece dyes, peroxide bleaching, naphthols, mohair plushes and imitation caracul cloths. Familiar with many types of machines. 38 years old, single with dependents.

B-11

Education—B.T.C., Lowell Textile Institute, 1926.

Experience—1 year dyeing raw stock with chrome colors, 6 years dyeing hosiery on all fiber combinations and cotton, wool and merino yarns in Franklin Process machines, several years experience in garment dyeing. Age 29. Married. References.

F-1

Education—Textile Institute, Alexander Hamilton Inst., Extension work at Brown Univ., working knowledge of German.

Experience—Has had executive departmental work with all types of textiles manufacturers. Acquainted with all types of textile machinery, dyestuff application, laboratory practice, cost methods, and checking methods and processes. References.

Members of the A. A. T. C. C.

who attend the

Knitting Arts Exhibition

to be held in

Philadelphia, April 23-27

are invited to make
the booth of the

HOWES PUBLISHING CO.

Booths 131-132-159-160

THEIR HEADQUARTERS

Members of the Philadelphia Section will welcome you

Proceedings of the American Association of Textile Chemists and Colorists

UNEMPLOYMENT REGISTER

Members of this association, who are without employment, should forward to the secretary a statement as to their qualifications and experience. This information will subsequently appear on these pages with an identifying key number. Employers are also requested to file with the secretary any vacancies which may occur in their businesses.—H. C. Chapin, Secretary, Lowell Textile Institute, Lowell, Mass.

Key: A—Laboratory and research; B—Dyeing or printing; C—Finishing; D—Sales; E—Instruction; F—Executive

Note. Persons who have obtained employment should notify the secretary at once. Prospective employers may file vacancies either with the secretary or the American Dyestuff Reporter.

A-2

Education—B.T.C., Lowell Textile Institute, 1932; also course in typing.

Experience—None to date, interested in quantitative analysis, experimental dyeing, color matching, dye testing and dye identification. Ability to learn quickly and will go anywhere. 23 years old, woman, single.

A-5

Education—B.T.C., Lowell Textile Institute.

Experience—Assistant chemist in carpet mill, dye tester in dye plant, research and analytical work in silk dyeing and finishing plant laboratory, plant chemist and overseer of bleaching in surgical dressing plant, assistant chemist in woolen mill. Age 29. Married.

A-B-2

Education—Lowell Evening Textile School, 1917.

Experience—Five years' experience in hosiery dyeing, full fashioned hosiery of silk and cotton and silk, also men's hosiery containing rayon, wool, cotton and celanese. Several years experience in laboratory work. Has also had experience in jig-dyeing of cotton piece goods, slub and top dyeing.

A-B-C-1

Education—Graduate Industrial Chemical Engineer, Pratt Institute—1911.

Experience—One year as plant control chemist, 4 years as laboratory chemist with gas company, 13 years as plant chemist with bleaching, dyeing and finishing plant. (Rayon and cotton piece goods). Formulated processes and put them into plant operation, 1 year as chemist and demonstrator for dyestuff company, 1 year as superintendent colorist with print works printing linen and rayon, 1 year as director of testing laboratory for national dry goods concern.

A-E-2

Education—B.T.C., Lowell Textile Institute, 1933.

Experience—Assistant instructor in chemistry, Lowell Textile Institute. Member of scholastic honorary fraternity.

A-E-1

Education—Ph.D., Univ. of Illinois, studied chemical engineering at Columbia, licensed chemical engineer, New Jersey.

Experience—10 years' experience teaching in colleges, subjects included chemical and textile subjects. Has had broad experience in industrial work including experience in testing materials, research and consulting. Will go anywhere; references.

B-1

Education—Educated and trained in chemistry and calico printing in Glasgow, Scotland.

Experience—Has been with large print works as colorist for 13 years producing first class work on cotton, rayon, wool and silk fabrics. References.

B-2

Experience—Boss dyer with one firm for 18 years, divisional supt. at print works for 1 year, in charge of processing and dyeing of cottons and rayons at large bleachery for 6 years. Prefers bleachery in East but will go anywhere. References.

B-3

Experience—Foreman piece dyer for the past 21 years. Can dye the following; celanese, rayon, cotton lacks, wool, silk and mixed fabrics. Has knowledge of finishing and laboratory work.

B-6

Education—Graduate R. I. School of Design.

Experience—5 years in bleachery, 7½ years as assistant dyer, 2 years as boss dyer and 3 years as superintendent of dyeing and finishing. Married, 33 years old. References.

B-7

Experience—Eight years as boss dyer on skeins and ribbons. Over ten years as chemist and head dyer for a large hosiery mill. Experienced on Silk, cotton, rayon and wool in skeins, ribbons, piece goods and all kinds of mixtures. Willing to go anywhere. Not afraid to work or face responsibility. Can handle help efficiently.

B-8

Education—Chemistry and Dyeing Department, Philadelphia Textile School.

Experience—Eleven years experience as chemist and boss dyer on the following: woolen, worsted and cotton

(Continued on page (102) 206)

AMERICAN
DYESTUFF
REPORTER

LOUIS A. OLNEY, Sc.D.
Professor of Chemistry and Dyeing, Lowell Textile Institute
Directing Editor

NORMAN A. JOHNSON
Managing Editor

MYRON DREW REESER
Advertising Manager

Published biweekly by
HOWES PUBLISHING CO., INC.
440 Fourth Avenue, New York City

A. P. HOWES
President

M. D. REESER
Secretary

H. F. CRAWFORD
Treasurer

Subscription price: $5.00 per year; Canadian $6.80; foreign $6.00

Vol. XXIII April 9, 1934 No. 8

PROTECTING THE CONSUMER

"TRUTH in Fabrics," as far as silk is concerned seems well on the way to accomplished fact judging by recent activity among various agencies concerned with this fiber. In these columns, in our last issue, we mentioned the work of the Consumers' Advisory Board of the NRA and its recommendations in regard to honest labeling of silk and silk-containing fabrics. Following closely upon the submission of these recommendations, the International Silk Guild, Inc., recently sponsored the Joint Conference on Silk Definitions and Standards held recently in New York City. This conference may be taken to indicate a definite forward step to satisfy consumer demand for "Truth in Fabrics," at least as far as silk is concerned.

Present at this conference were the representatives of eleven important trade organizations to whom the matter of setting up definite terms and standards for silk merchandise was recognized as being one of the most important movements which has been initiated in this industry in a good many years. Because of its importance these representatives realize that the greatest possible deliberation needs to be given to every factor because of the possible, final and far-reaching effects on silk merchandising. The position of the ultimate consumer in this problem is logical to conceive and easy to appreciate. The consumer simply wants to know what he is getting and that he is getting what he pays for. The reason that we can so easily understand the consumers' position is probably due to the fact that actually we are all consumers and we all know what we want and what we are willing to pay for. In the separate consideration of any industry it is the consumer who deserves the ultimate consideration, for without the consumer there is no industry.

The attitude of the silk industry in this regard might well be expressed in the words of Paolino Gerli, speaking at the above-mentioned conference. He said that "it was only logical that a first step in our campaign should be the establishment of definitions for the American market which, in line with the new spirit of fair play and a square deal all around, would establish for silk articles a terminology, simple, descriptive and generally acceptable to the trade and those representative bodies having to do with the consumers' interests. This should not be a situation in which the silk interests should wink at truth and while expressing a desire for it, cloud the issue or beg the question."

The feeling of the retailers are shown by one who spoke as follows: "It seems to me that if we study very carefully the developments in the last few years, I think we will realize that consumers of this country are thinking more and more about what they want. They want to know what they are buying. As retailers, it seems to me the smart thing for us to do is to try and interpret just what they are driving at and I think it would also be smart for the manufacturers to give some real thought to this thing with the idea of trying to determine just what the consumers want and what they are entitled to and to try to work out a program whereby you can make that merchandise, mark that merchandise, and see that all retailers will know what they are buying, so that they in turn can tell the consumers this is what it is."

As far as the attitude of the ultimate consumer is concerned there can be no question about that. All you have to do is consult your own feelings and you will know the feelings of a hundred million other consumers.

We congratulate the agencies who have been working on this problem for the silk industry for their foresightedness. It is only logical to presume that what is good for the consumer will eventually be good for the industries serving the consumer. It is a matter of good business for manufacturer and retailer alike. After all, industry works for the good-will of the consumer and to obtain and retain this good-will is the greatest asset of any industry.

We hope that other industries will follow the example of the silk industry "so that each will be able to stand forth on its own merit in its true light to serve that final consumer whose favor we are all so eager to enjoy, but which in the final analysis we must merit by a straightforward presentation of what we have to sell."

For Better Wearing Textiles

The wearability, or wear resistance, of textile dress fabrics is a vastly different problem today than it was when our grandmothers purchased their best silk dresses for a lifetime of wear. Today it is the style factor that determines the type of the gown purchased; the question of whether or not the fabric will resist abrasive wear is seldom thought of. The style cycle is usually so short lived that the gowns are outmoded and discarded before the component fabric begins to show signs of wear. And it is this character of demand from consumers that encourages the production of fabrics lacking in strength and resistance to abrasive wear, although fast in color and satisfactory in design and finish. These were among the facts brought out at the conference of textile authorities on fabric wear and wear testing, held under the auspices of the U. S. Institute for Textile Research, Inc., at the Hotel Commodore, New York City, Saturday, March 24.

The conference subject is one of the major studies of this research institute, and the principal purposes of the meeting were to secure up-to-date reports of what is being done by mill, institutional, department store and other laboratories throughout the country on fabric wear research, thus providing a clear picture of just what the problem is and what needs to be done to solve it. With this information before it U. S. Institute's research council will endeavor to devise a co-operative plan designed to eliminate unnecessary duplication of work in progress, to correlate that work and to render it more efficient and resultful.

The conference was presided over by Dr. W. E. Emley, chairman of U. S. Institute's research council, and Chief Organic and Fibrous Materials Division, U. S. Bureau of Standards; and Ephraim Freedman, director of the R. H. Macy Co. Bureau of Standards, delivered the key-note address. Some 75 men and women were in attendance, including representatives of manufacturers and merchants from every branch of the textile industry, of retail stores, laboratories, of colleges and home economics departments. A large number of studies in progress were disclosed, with encouraging accomplishments in the wear-testing of carpets, upholstery, lining materials and hosiery. Several new wear-testing machines were described, including one recently developed by the U. S. Bureau of Standards for carpets, and another by the Industrial By-Products and Research Corp. for hosiery; the latter was exhibited.

From the research standpoint the most important needs brought out by the discussion were for standard testing methods that would make tests on different machines comparable, and for the correlation of machine tests with data defining results of wear under service conditions.

Among those represented at the conference were the following: American Bemberg Corp., New York City, Ernest C. Morse; American Woolen Co., New York City, R. L. Hall; Bigelow-Sanford Carpet Co., Thompsonville, Conn., G. E. Hopkins; S. Blumenthal & Co., Inc., Shelton, Conn., Joseph H. Wright; Cheney Bros., South Manchester, Conn., Harry Benson; Collins & Aikman Corp., Philadelphia, Pa., W. F. Bird, G. S. Hiers, W. R. Keen; Du Pont Rayon Co., New York City, J. B. Quig, Alexis Sommaripa; Eavenson & Levering Co., Camden, N. J., Alban Eavenson; Gotham Silk Hosiery Co., New York City, E. W. Ditton; Hardwick & Magee, Philadelphia, Pa., Walter C. Campbell; C. H. Masland & Sons, Carlisle, Pa., C. H. Masland, 2nd; Mohawk Carpet Mills, Amsterdam, N. Y., E. Friderici; Minot, Hooper & Co., New York City, Horace J. Jaquith; Pacific Mills, New York City, K. H. Barnard, J. E. Bradley, W. O. Jelleme; Alex. Smith & Sons Carpet Co., Yonkers, N. Y., A. G. Ashcroft; A. M. Tenney Associates, New York City, H. DeWitt Smith, A. M. Tenney; Textile Dyeing Printing Co. of America, Inc., Hawthorne, N. J., Messrs. Messmer and Wolff; Tubize Chatillon Corp., New York City, Robert E. Sargent; Wellington, Sears & Co., New York City, Henry S. Grew, Jr.; M. J. Whittall Associates, Worcester, Mass., James P. Whittall; Industrial By-Products & Research Corp., Philadelphia, Pa., Chas. L. Simon; Lowell (Mass.) Textile Institute, Prof. H. J. Ball; R. H. Macy & Co., New York City, Ephraim Freedman; National Federated Textile Industries, New York City, Ramsey Puegnet; Mass. Institute of Technology, Cambridge, Mass., Prof. E. R. Schwarz; Miss Ellen B. McGowan, Teachers College, Columbia Univ., New York, N. Y.; Tinius Olsen Testing Machine Co., Philadelphia, Pa., R. B. Lewis; E. T. Pickard, Sec., The Textile Foundation, Washington, D. C.; U. S. Bureau of Home Economics, Washington, D. C., Ruth O'Brien; U. S. Bureau of Standards, Washington, D. C., Dr. W. E. Emley; C. H. Clark, Sec., U. S. Institute for Textile Research, Inc.; U. S. Testing Co., Hoboken, N. J., D. E. Douty and A. E. Davieau; Wyzenbeek & Staff, Chicago, Ill.; Mrs. Wm. D. Sporborg, General Federation of Women's Clubs; Associates for Government Service, New York City, E. Stag Whitin.

S. O. C. M. A. Meeting

A luncheon and general meeting of the Synthetic Organic Chemical Manufacturers Association was held at the Chemists' Club, New York City, on Thursday, March 22nd, at 12.30 P. M., President Merz presiding.

The meeting was opened with a brief description by President Merz of the N.R.A. conference held in Washington March 5-8. Consideration was then given to the Administration's tariff trading project as embodied in the Doughton Bill (H. R. 8687).

An Annual Outing will be held this year as usual, the arrangements being left in the hands of the Board of Governors.

Modern

Yarn Conditioning

By **ANDREW J. KELLY**

Burkart Schier Chemical Company, Chattanooga, Tenn.

THE proper conditioning of filling and other yarns is a most important phase of the manufacture of perfect textile fabrics. By conditioning is here meant the mechanical moistening of yarns in such a manner as to positively insure an adequate moisture regain. This regain is necessary if most nearly ideal conditions are to prevail in subsequent processing. The importance of moisture in processing textiles is fully attested by the universal mill use of humidification systems. But even when the humidity of the mill atmosphere is ideal there is occasion for dampening yarns—especially if they are in a near bone-dry condition. Waiting for the humid mill air to properly condition such yarns would be tedious and would involve a large floor inventory. Various alternatives have at one time or another been in vogue. Yarns have been stored in cellars and other wet places. They have been watered like flowers in a garden, with just as much loving care. They have been treated in enclosed steam chambers. Each of these methods was helpful and to a certain degree successful; all proved the desirability of conditioning. They served as stepping stones to modern practice.

Present day conditioning may be carried on in specially constructed machines which occupy a very small space and which produce the result desired in an amazingly short time. Operation may be continuous if desired but the apparatus may be stopped or started without heat loss or variation in results or other complications. The machines consist essentially of an opening for feeding, an ingenious conveyor system, an enclosed spray chamber, and a delivery opening. The operation as applied to bobbins or quills is simple but adequate. They are placed in the machine at the feed end and carried by the moving conveyor to the spray chamber. Here they are sprayed with an aqueous mist which thoroughly and uniformly moistens the yarn. Even impregnation is aided by the fact that the bobbins or quills are automatically turned as they pass through the spray. They are carried on to the delivery end and are discharged into baskets or trucks, ready for weaving or any other processing.

One of the most important results of the passage through the conditioning machine is the setting of twist; this is achieved to a remarkable degree. Yarn on bobbins fresh from the spinning frame shows a deplorable tendency to kink and snarl and otherwise complicate further handling. After conditioning it is completely disciplined, with the twist permanently set and the fibers flat. Such yarn is, of course, most desirable for weaving.

The machines, and especially the conveyors and spray chambers, are constructed to withstand action from the moist spray. The reservoir for the aqueous conditioning fluid is made of corrosion resistant metal. Provision is made for returning to the reservoir spray which is not absorbed by the yarn in passing. Pump and conveyor are operated by electric motor. The whole apparatus is usually of a simple but rugged construction, and practically fool-proof.

The aqueous spray must be capable of quick and uniform absorption by the yarn, for the time of each individual bobbin or other yarn carrier in the conditioning section is short. Furthermore, cotton fibers are very resistant to wetting by water alone. So, a specially prepared wetting or conditioning agent is always incorporated with the cold water in the reservior of the machine. With most such agents a one per cent by volume solution is sufficient to obtained the desired penetration; one gallon being added to ninety-nine gallons of water. There are several basic requirements for the conditioning agent. It must be easily soluble in cold water and form a stable mixture. It must have a rapid wetting action so that the yarn may be quickly and evenly penetrated without the formation of globules or droplets of liquid. It should be hygroscopic to hold the yarn in the soft moistened condition obtained in the machine. It must be antiseptic, to check and retard mildew in the dampened fibers. And it must be non-corrosive—to the conditioning machine, to the spinning equipment, to any metal which the liquid or spray may contact. Several fluids are available which meet these requirements and which have other advantages listed by their manufacturers.

Yarns may be also conditioned on packages. The apparatus is dissimilar to that described above, but is somewhat similar to a familiar device used in random dyeing. Each package is slipped over a perforated core and then by a simple step of the operator is sprayed under high pressure from within, via the perforations. The time taken is but a few seconds yet the packaged yarn may be given a very accurate moisture regain. Such apparatus is, of course, especially desirable in job dyeing or similar applications where delivery must be made in such a hurry as to eliminate the hope of proper conditioning by other methods.

Yarn conditioning is thus another of the operations in textile processing which is keeping step with the march of progress. The conditioning machines are a triumph of efficiency combined with simplicity (the most desirable of all combinations). And modern wetting agents are finding another modern use. The whole process is capable of many applications in the textile field.

Protection of Woodwork against

Moisture and Steam*

By C. D. YOUNG

THE protection of woodwork against moisture and steam in such places as dyehouses, bleachworks, etc., is a problem in many firms. Such woodwork may be both internal and external and even where the framework is of girders of considerable extent. When such a problem arises the claims of two of the cheapest of materials might be most carefully considered before purchasing any special paint or solution at a correspondingly special price.

These materials are tar and creosote. It is not perhaps generally realized that by their use a range of shades from a very pale brown through blues and greens to dull reds and black may be obtained. Their protective and preservative power is well known, but although of entirely secondary importance, they are not without decorative value. Tar used alone must be applied hot, and preferably to a hot surface. If the surface is cold it immediately chills the tar and leads to a thick, unsightly and unsatisfactory surface. Creosote alone varies in shade from the palest, which hardly stains wood at all, to one which gives a good brown. Used in conjunction with each other, any shade between the extremes are available, depending on the relative proportions used. Further, with a sufficient quantity of creosote the solution can be used cold and has considerable penetrating power.

The modifications of the shade towards blues and greens are obtained by dissolving in the solution a suitable oil-soluble color. For outside work a mixture containing more tar than creosote gives a good black on wood. As the viscosity is increased by the presence of the tar, such a solution may not penetrate so far into the wood as a thinner one and therefore a preliminary coating of creosote alone may be given with advantage. Other additions may be made in the tar-creosote mixtures. The first to consider is dry slaked lime. When mixed in suitable proportions it of course thickens the solution, which then has more the consistency of a paint, and the shade is changed to a battleship grey. Cement is another cheap filler, and slate dust may also be used.

There is, however, yet another material the cost of which is nil. That is flue dust. If sieved free from coarse particles it makes an excellent filler. Where a red shade is required, a quantity of red oxide or Venetian red may be mixed with the solution, or an oil-soluble red. Still another addition which may be made is paraffin wax. Small proportions only should be used or the solution may either be too thick to work easily or set completely to a paste. Even comparatively small amounts add to the waterproofing properties of the solution.

Solutions of tar and creosote with or without paraffin wax are equally suitable for floors, particularly where the floors are liable to be wet. The waterproofing action alone is beneficial, apart from the general protection of the creosote. Water cannot soak in to the same extent, and the development of unpleasant smells is very largely prevented. The presence of the wax does not make the floor slippery unless an excessive amount has been used. Even in such a case the wax has an opportunity to soak in, and the result is likely to be less dangerous than when a floor is polished with a wax polish. The analogy between the black varnishes and the tar-creosote mixture is obvious. Some blacks are made with creosote as the solvent, and only require the addition of a further quantity to be used to give a brown preservative stain for wood. Similarly, those made with white spirit of naphtha as the solvent can be diluted with these, and also give a brown stain but without the same preservative properties.

*Reprinted from the Textile Manufacturer.

Elected Vice President

Announcement was made on March 28 by R. H. Dunham, president of Hercules Powder Company, Wilmington, Delaware, of the election of L. N. Bent as vice president of the company. Mr. Bent, formerly general manager of the Naval Stores Department, also becomes a member of the company's executive committee.

The new vice president, a native of Framingham, Massachusetts, is a graduate of Massachusetts Institute of Technology, and is a member of numerous technical and trade associations.

A new method of finishing

Jute Fabrics*

THE finishing of jute fabrics by various kinds of impregnation is long-established, but it is nevertheless a field in which there is likely to be considerable development. Fabrics are treated with various chemicals or organic substances for the purpose of making them waterproof or water resistant, airproof, rot resistant, fire or flameproof, or the fabric is made the backing or carrier of dopes of linseed oil, bitumen, celluloses, rubber, starch, etc., etc., as of course is the case in the trades which use jute fabrics for linoleum, oilcloth, tarpaulins, and so on. Progress in this field may be expected to spring from the very large field of new chemical substances which are now becoming commercially available, such as wetting and dispersive agents or emulsifiers, cellulose esters and ethers, treated oils and new tar derivatives, new antiseptics.

One new substance, perhaps the most important, which has only become commercially available recently is rubber latex. The use of latex has already expanded enormously. It is a substance which may have very considerable effects on the use of jute fabrics. On the one hand it may be a competitor; for example, it is being used to make a type of carpet in which a light pile fabric is applied to an non-slip backing of rubber. On the other hand, the jute backing of carpets may be treated with latex to render them impervious and non-slip. Another promising use is the treatment of wool or cotton baling so that jute fibers are not shed and so contaminate the wool or cotton.

Concentrated latex, which is now on the market, differs from ordinary raw rubber in its constitution and uses because it is the original but condensed water dispersion of rubber, which when diluted or mixed can be applied very simply without the necessity of solution in organic solvents such as are used in the ordinary rubber trade. Methods of vulcanizing are equally simple, usually requiring mild heat only. It is usual to make a mixture containing the latex, a filling agent, anti-ager, vulcanizing and accelerating agents. An example for the rubberizing of sacks may serve to demonstrate the requirements.

Mix (by weight):

130 Latex
150 Whiting
3 Zinc Oxide
2 Sulfur
0.2 Anchoracel 2.P.
25 Casein solution 10%
about 35 Water

The first step is to make the casein solution; 100 parts by weight of crude acid casein are homogeneously distributed in 900 of water and mixed with 15 of 25% liquid ammonia; 2 parts of preserving agent should be added. The simplest manner of making the mix is first to add the casein solution to the latex, then the water, and lastly to mix the fillers in gradually by means of a suitable mixing mill. The mix should finally be passed through a color mill.

The mix is spread on the fabric by means of a spreading machine. The fabric should be as smooth and as free of impurities as possible before being treated. The more even and smooth the surface is, the smaller will be the quantities of spreading mix used. The thickness of the spread will naturally be dependent upon the purpose, whether the sacks are required to be merely dustproof or whether they must be more or less waterproof. Generally speaking, it is found desirable to keep costs down by spreading once only. This entails the application of about 2½ oz. dry substance per sq. yd. The material must be calendered after each spread in order to secure the penetration of the mix into the pores of the fabric and to press the jute fibers flat against the fabric. The thickness of the spread can be controlled by the position and sharpness of the knife and by the speed of spreading.

It is sometimes desirable to impregnate the jute fabric right through and not merely to rubberize its surface. The best method of impregnation is to pass the jute through a trough containing the mix, to press off the superfluous mix, and then to dry it.

*Reprinted from the Textile Manufacturer.

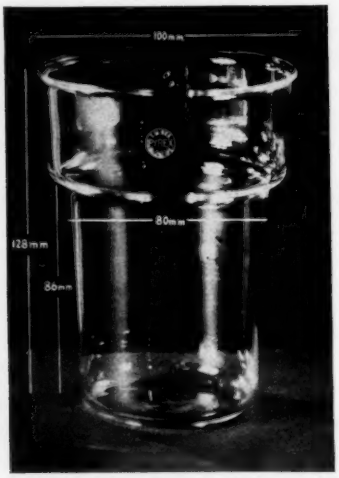
To Continue Exhibit

Continuation of the exhibits of Union Carbide and Carbon Corporation at A Century of Progress in 1934 was assured this week with the announcement that contracts for exhibit space had been signed. This announcement is a direct reflection of the confidence of the Union Carbide organization in the plans which are under way to make the 1934 Fair even more outstanding than last year. In keeping with the progressive nature of A Century of Progress numerous changes have been planned to make the UCC exhibit a still more popular "center of interest" of the Hall of Science.

The principal Units of Union Carbide and Carbon Corporation whose products and activities will be displayed in the Applied Science Division include National Carbon Company, Inc., The Linde Air Products Company, Carbide and Carbon Chemicals Corporation, Oxweld Acetylene Company, Union Carbide Company, The Prest-O-Lite Company, Inc., Acheson Graphite Corporation, Electro Metallurgical Company, Haynes Stellite Company, and The Union Carbide and Carbon Research Laboratories, Inc.

Pyrex Dye Pots

Announcement has been made by the Teschner-Quinn Corp., 77 Chambers St., New York City of the manufacture of a dye pot composed of Pyrex. This dye pot was



developed through cooperation with the Corning Glass Works, makers of the Pyrex brand laboratory glassware. It is fabricated with heavy walls to resist mechanical shock and, of course, is transparent, enabling the technician to see through the sides. It is recommended by the manufacturer for dyehouse laboratories and state that the cost is about one-half that of the porcelain dyepot.

Named Cellulose Products Manager

R. H. Dunham, president, Hercules Powder Company, Wilmington, Delaware, announced on March 28 the appointment of Mahlon George Milliken as general manager of the company's Cellulose Products Department to succeed A. B. Nixon, who was named general manager of the Naval Stores Department.

Mr. Milliken, a graduate of Rutgers in 1913, became connected with the nitrocellulose industry when he entered the employ of the Union Powder Corporation at Union Plant in 1915.

The place vacated by Mr. Milliken is being filled by E. F. Thoenges, formerly assistant superintendent at Union.

New Catalog

The latest copy of the catalog of the Glyco Products Co. is now off the press. It deals extensively with emulsifying agents, synthetic resins and waxes, polishes, sprays, etc. A copy may be obtained by chemists and manufacturers by writing to them at Bush Terminal, Brooklyn, New York.

NEW PATENTS

(*Abstracted by S. O. C. M. A.*)

4.5-Dimethyl-7-Chloro-Oxythionaphthene and Its Indigoid Derivatives. (Dye and print cotton bright pink, blue and red-violet shades of excellent fastness to boiling.) Norbert Steiger, Frankfort-on-the-Main, Ger., assignor to General Aniline Wks., N. Y., N. Y., No. 1,945,823, 2/6/34.

Azo Dyestuff and Process of Making Same. (Obtained by coupling an arylide of 2:3-hydroxynaphthoic acid with a diazotized aryl- or aralkyl-ether of an ortho-aminophenol which contains a carboxylic acid ester group; suitable for dyeing and printing scarlets and reds characterized by extraordinary brightness and advantageous properties of fastness, particularly to chlorine and kier-boiling.) Gerald Bonhote, Basel, Switzerland, assignor to firm Society of Chemical Industry in Basle, Basel, Switzerland, No. 1,946,010, 2/6/34.

Method of Producing Water-soluble Substances Having Capillary-Active Properties and the Product. (Comprises sulfonating polymerized cracked petroleum gases containing unsaturated aliphatic hydrocarbons; used for various purposes, for instance, as wetting-, emulsifying- or frothing-agents, or solvents.) Ludwig Becker and Robert Muller, Dresden, Ger., assignors to Chemische Fabrik Pott & Co., Dresden, Ger., No. 1,950,287, March 6, 1934.

Anthraquinone Derivative and Process of Preparing the Same. (A dyestuff intermediate which comprises condensing a 1-chlor-anthraquinone-2-carboxylic acid with para-amino-salicylic acid in an alkaline medium and in the presence of a condensation catalyst; a division of copending application Ser. No. 364,943, filed May 21, 1929.) Alexander J. Wuertz, Carrollville, Wis., assignor to E. I. duPont deNemours & Co., Wilmington, Del., No. 1,950,348, March 6, 1934.

Process for Preparing Vat Dyestuffs of the Dibenzanthrone Series. (An improved process of preparing ethers of hydroxydibenzanthrone, commonly known as dyestuffs of the "jade-green" series.) Otto Stallman, So. Milwaukee, Wis., assignor to E. I. duPont deNemours & Co., Wilmington, Del., No. 1,950,366, March 6, 1934.

Dyestuffs Derived from Cyano Acetic Acid. (Dyeing cellulose acetate silk from their aqueous suspensions or solutions, respectively, yellow to orange shades of good fastness to light; for example, the reaction product of cyano-acetic ethyl ester and p-diethylaminobenzaldehyde dissolved in alcohol.) Ottmar Wahl, Leverkusen-I. G. Werk, Ger., assignors to General Aniline Works, Inc., N. Y., N. Y., No. 1,950,421, March 13, 1934.

Manufacture of Cellulose Esters. (And cellulose acetate by acetylating material consisting essentially of cellulose by means of acetic anhydride in presence of stannic halide.) Henry Dreyfus, London, England, No. 1,950,663, March 13, 1934.

Thiazoline Dye and Method of Preparing it. (Photosensitizing dyes; a continuation-in-part of Patent No. 1,-

942,854.) Leslie G. S. Brooker, Rochester, N. Y., assignor to Eastman Kodak Co., Rochester, N. Y., No. 1,950,876, March 13, 1934.

Manufacture of Primary Disazo-Dyestuffs and Their Production. (Comprises coupling the diazo compound of an aminoarylsulfonamide in acid solution with a per-aminohydroxynaphthalene sulfonic acid, then combining the latter with any desired diazo compound in an alkaline medium to produce a diazo-dyestuff; dye wool and silk fast reddish-blue to greenish-blue and blue-black shades even from a neutral dye bath.) Bernhard Richard, Basel, Switzerland, assignor to the firm of J. R. Geigy S. A., Basel, Switzerland, No. 1,950,952, March 13, 1934.

Azo-Dyestuffs and Process of Making Same. (For example, the condensation products of 1-phenyl-5-pyrazolone-3-carboxylic acid and paraphenylene diamine or other diamines as the basic material; yield on animal and vegetable fibres yellow to orange to brown to red tints of good fastness properties.) Gerald Bonhote, Basel, and Max Schmid, Riehen, near Basel, Switzerland, assignors to the Society of Chemical Industry in Basle, Basel, Switzerland, No. 1,951,082, March 13, 1934.

Azo Dyestuff and Color Lakes made Therefrom. (For instance, the mono-azo-dyestuff, obtainable by coupling diazotized 2-amino-4-sulfo-1-benzoic acid with *b*-naphthol when used in the form of its mono- or- disodium salt is capable of dyeing wool clear orange-red tints, which turn Bordeaux-red when after-chromed; its conversion into the lakes may be performed in one single operation and as such show red tints of good light fastness.) Hermann Wagner, Soden-on-Taunus, Ger., assignor to General Aniline Works, Inc., N. Y., N. Y., No. 1,951,298, March 13, 1934.

Wetting and Dispersing Agents. (Sulfuric acid esters or true sulfonic acids, obtained by the action of sulfonating and sulfatic agents on higher unsaturated aliphatic amines and higher aliphatic hydroxy amines having more than eight carbon atoms in the chain.) Heinrich Bertsch, Chemnitz, Ger., assignor to firm H. Th. Bohme Aktiengesellschaft, Chemnitz, Ger., No. 1,951,469, March 20, 1934.

Tanning Material and Process for Preparing. (Comprises condensing a hydroxy aromatic sulfonic acid with an aldehyde in presence of thiourea; for use especially in the making of white leather.) Ian C. Somerville and Harry R. Raterink, Phila., Pa., assignors to Rohm & Haas Co., Phila., Pa., No. 1,951,564, March 20, 1934.

New Process of Preparing Arylacetic Acids and New Product Obtainable Thereby. (More specifically, comprises causing monohalogen acetic acid to react with a-chlornaphthalene; compounds obtainable can be used for the manufacture of dyestuffs, auxiliary products for dyeing and pharmaceutical products.) Arthur Wolfram, Frankfort-on-the-Main-Rodelheim, Ludwig Schornig, Frankfort-on-the-Main-Hochst, and Emil Hausdorfer, Hofheim-in-Taunus, Ger., assignors to General Aniline Wks., Inc., N. Y., N. Y., No. 1,951,686, March 20, 1934.

Process of Preparing Esters. (Primarily mineral acid esters or glucosides suitable for use in the textile leather, and allied industries.) Heinrich Bertsch, Chemnitz, Ger., assignor to H. Th. Bohme, Aktiengesellschaft, Chemnitz, Ger., No. 1,951,785, March 20, 1934.

Azo-Dyestuffs Insoluble in Water and Fiber Dyed Therewith. (Obtainable by coupling diazo compounds of 4-amino-2.5-dialkoxy-diphenyl or of substitution products thereof with 2.3-hydroxynaphthoic acid arylides, either in substance, on the fiber or on a substratum adapted for the production of lakes; shades vary from Bordeaux to violet to blue possessing good fastness.) Karl Zahn and Kurt Schimmelschmidt, Frankfort-on-the-Main, Ger., assignors to General Aniline Wks., Inc., N. Y., N. Y., No. 1,951,815, March 20, 1934.

Chromium Compound of Azo Dyestuffs. (E.g., comprises causing a chromium hydrate paste to react with azo dyestuff obtained from diazotized metaaminobenzoic acid and (2'-hydroxy-3'-carboxy-5'-sulfo)-1-phenyl-3-methyl-5-pyrazolone; dye wool fast, usually pure yellow to orange shades having an excellent fastness to light and may be employed for printing on cotton or for the preparation of lakes and the like.) Hans Krzikalla, Mannheim, Ger., assignor to General Aniline Wks., Inc., N. Y., N. Y., No. 1,951,830, March 20, 1934.

Alkyl-2-Hydroxynaphthalene-3-Carboxylic Acids. (Obtainable by causing carbon dioxide to act upon a dry alkali metal salt of an alkylated 2-hydroxynaphthalene; valuable for the production of azo dyestuffs or for preparing other intermediate compounds for azo dyestuffs.) Wilhelm Luce, Hofheim-on-the-Taunus, and Ernst Fischer, Frankfort-on-the-Main, Ger., assignors to General Aniline Wks., Inc., N. Y., N. Y., No. 1,951,832, March 20, 1934.

Emulsifying Detergent and Wetting Agent. (An acid-soluble, soap-like product which comprises heating formaldehyde, dimethylamine, and stearamide, at a temperature sufficient to split out water only.) Herman Alexander Bruson, Phila., Pa., assignor to The Resinous Products & Chemical Co., Phila., Pa., No. 1,952,008, March 20, 1934.

New Naval Stores Head

On March 28, announcement was made of the selection of A. B. Nixon as general manager of Hercules Powder Company's Naval Stores Department. Mr. Nixon takes the place vacated by L. N. Bent who was elected vice president and member of the executive committee.

The new naval stores head was graduated from Purdue University in 1915, and went to Kenvil, New Jersey, as chemist at the Hercules explosives plant.

Mr. Nixon is widely acquainted in the protective coatings, plastics, and textile industries, and his experience in, and knowledge of, these businesses plus his contacts with others which use naval stores products, fit him admirably to carry on and extend the facilities and services of his new department.

OPEN FORUM

Readers are referred to page 127 of the February 26th issue of the American Dyestuff Reporter which contains an explanation of the method under which this column will be conducted.

Answers

1—Will you kindly advise us as to where we can secure information relative to treating cotton yarns with some solution similar to that used in producing acetate rayon, so that the cotton so treated, will be susceptible to dyestuffs used on acetate rayon?—**U. S. L. C. M.**

Answer—Cotton yarns may be treated in several ways to make them resistant to direct cotton dyestuffs, in the same manner as acetate rayon resists direct cotton dyes. The most successful method as far as we know involves the use of para toluol sulfo chloride or a similar compound. (See American Dyestuff Reporter, March 12, 1934, page 147.)—A.D.R.

3—How would you test the fastness of dyes, to be used in worsted bathing suits, to sea water?—**H. R. W.**

Answer—I would recommend the official method of the A.A.T.C.C. for testing fastness to sea water for dyes to be used for worsted yarns for bathing suits. This test is as follows:

Saturate a swatch dyed with the dye to be tested with a swatch of undyed worsted (undyed cotton, silk, or rayon swatches may be added if desired) in a solution of 3% sodium chloride and ½% magnesium chloride. The swatches are then rolled fairly tightly together and allowed to stand over night or 24 hours in a closed vessel to prevent evaporation. The entire test is carried out at room temperature. With suitable dyes there should be no staining of the white swatches in this test.

In carrying out this test on dyes for worsted yarns to be used in bathing suits I would make a braid of the dyed yarn with white worsted yarn. The other fibers could be omitted, not being present in the worsted bathing suit. After saturation as above allow the braid to stand 24 hours, since bathing suits are often rolled up and packed wet—C.L.H.

Unanswered Questions

2—I understand that the indigisol dyes are being used in wool dyeing. Can you give me any information in regard to the method of application and their fastness properties?—**P. V. I.**

4—Potassium permanganate has at all times been used in small amounts by the textile industry for certain processes of bleaching and dyeing. Various manufacturers of this product would like to know whether or not its limited used in various textile processes is due mostly to its cost, or because other bleaching agents are more suitable. Also, if its use could be extended beyond the process of bleaching if its cost was reduced somewhat.—**Chemical Manufacturer.**

5.—We are interested in obtaining some information on the reaction of rayon to dyestuffs in comparison to silk, cotton, wool and linen. Can you set us straight on the following points?

A. Does rayon take dyes more easily than any, or all, of these?

B. Does rayon take truer colors of dye?

C. Does it take dyes more evenly?

D. Does it retain colors longer?

E. Can a greater range of color variation be obtained in dyeing rayon? More subtle colors? More brilliant?—**M. J.**

CLASSIFIED

The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery or supplies for sale—the rate is $5.00 per column inch or less per insertion.

WANTED

DEMONSTRATOR with thorough technical training in the formulation and application of Oils, Softeners and Sizes on Textile products. Must possess good personality and have sales ability. Previous experience in selling essential. Application by letter stating technical training, previous connections, territory covered, and salary desired. Write Box No. 807, American Dyestuff Reporter, 440 Fourth Avenue, New York, N. Y.